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the 1990s, the number of people in the UK who are employed in the public sector has increased by 1.5 million, from 2.5 million in 1980 to 4 million in 1995. The public sector has become a major employer in the UK, and its growth has been a key factor in the overall growth of the economy.

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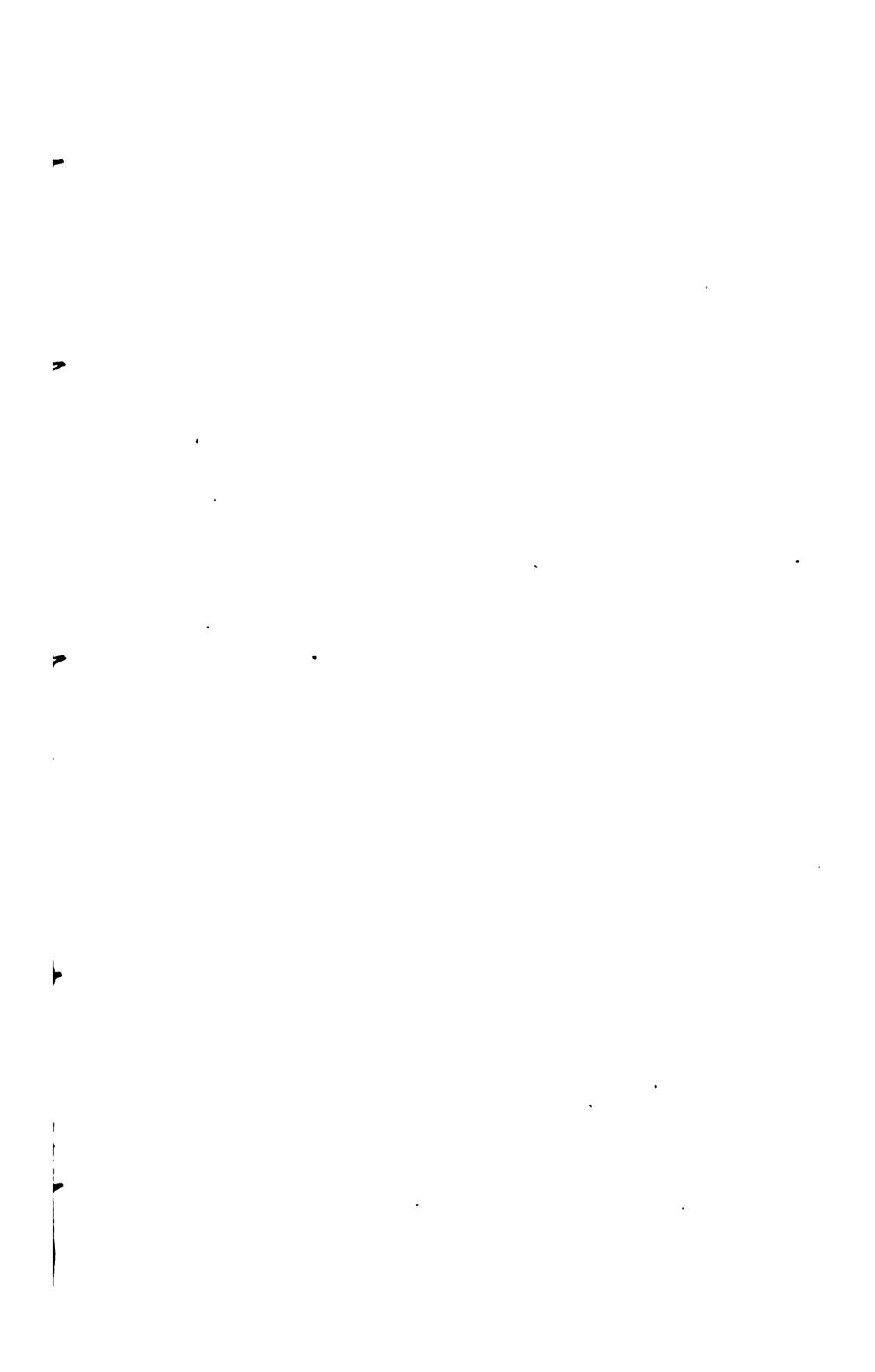
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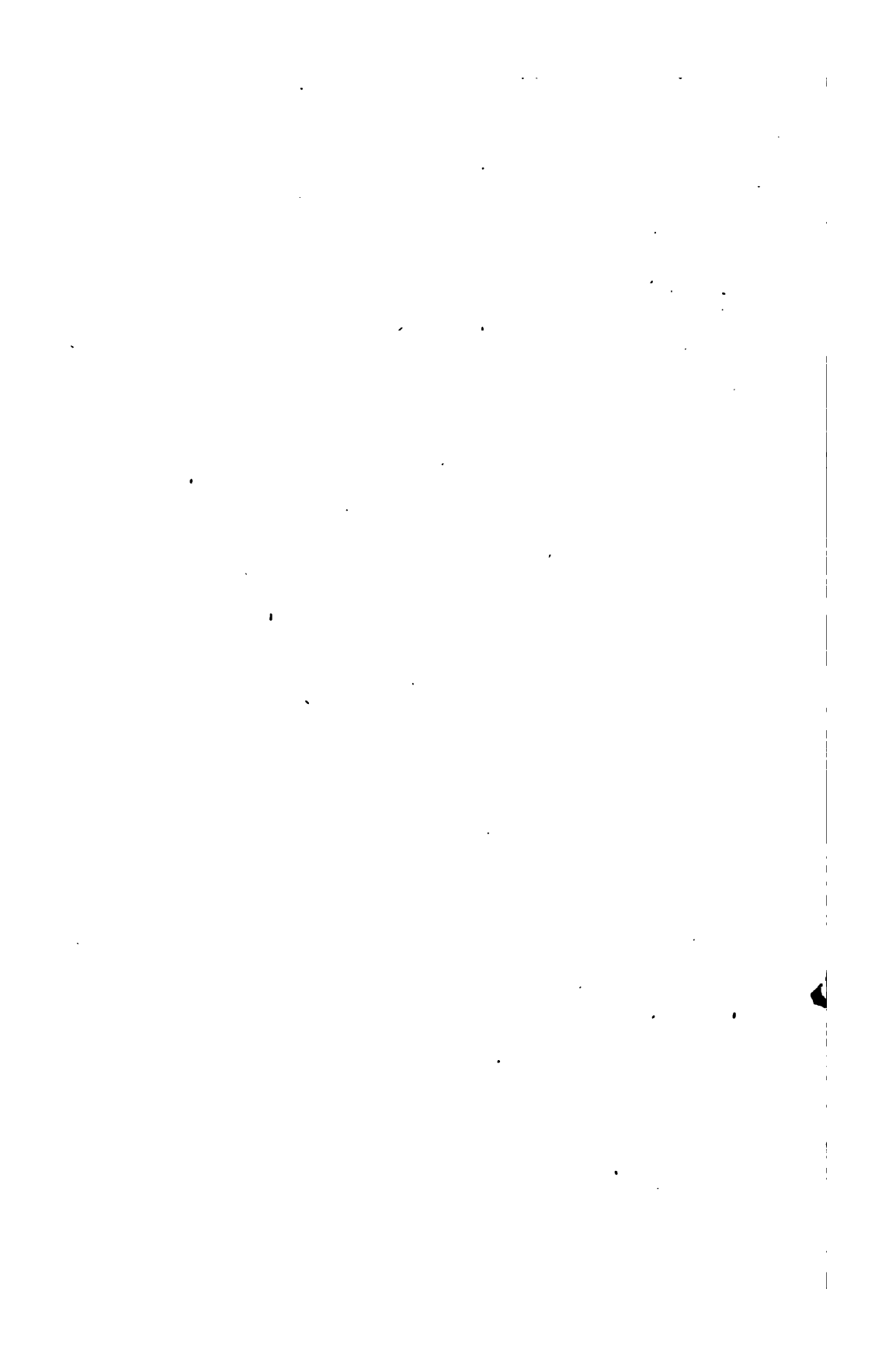
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JOURNAL OF THE TRANSACTIONS
OF
THE VICTORIA INSTITUTE.

VOL. XIX.

JOURNAL OF THE TRANSACTIONS
or
THE VICTORIA INSTITUTE.

VOL. XIX.

©

JOURNAL OF

THE TRANSACTIONS

OF

The Victoria Institute,

OR

Philosophical Society of Great Britain.

EDITED BY THE HONORARY SECRETARY,
CAPT. FRANCIS W. H. PETRIE, F.G.S., &c.

VOL. XIX.



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. The Institute's object being to investigate, it must not be held to endorse the various views expressed at its Meetings.

PREFACE.

THE Nineteenth Volume of the *Journal of the Transactions* of the VICTORIA INSTITUTE is now issued. It contains papers by the following authors:— The Rev. F. A. ALLEN, M.A., “On the Evolution of Savages by Degradation,” treating of those instances of retrogression and degradation known to students of History and Ethnology. PROFESSOR J. AVERY, of Bowdoin College, United States, “On the Religion of the Aboriginal Tribes of India,” a careful and useful contribution to our knowledge upon the subject. The Rev. W. R. BLACKETT, M.A., late Principal of Calcutta College, follows with “Some Thoughts on the Evolution of Religions”; and the Rev. R. COLLINS, M.A., late Principal of Cottayam College, who is so well able to speak upon the subject, gives “Some Characteristics of Primitive Religions.” The Rev. G. BLENCOWE’s essay “On Human Responsibility” will be welcomed by those who seek to show the weak points in modern Materialism. PROFESSOR R. S. DABNEY, D.D., LL.D., of Texas University, on “The Inductive Logic.” The Rev. MYRON EELLS, “On the Worship and Traditions of the Aborigines of America,” a subject which he studied under peculiar advantages, during a long residence amongst them. Mr. JOSEPH HASSELL, A.K.C.,

"On Evolution by Natural Selection," to which paper some remarks by PROFESSOR VIRCHOW on Evolution are appended. Mr. Hassell adds a second paper, entitled, "Was Primeval Man a Savage?" in which the difficulties which beset the opinion that man was originally in that state are considered; it is followed by an able review of the present state of the question of Evolution and Development by the Rev. J. WHITE, M.A. The late Mr. W. P. JAMES, F.L.S., "On the Relation of Fossil Botany to Theories of Evolution"; this essay is followed by remarks from Sir RICHARD OWEN, K.C.B., F.R.S.; Mr. W. CARRUTHERS, F.R.S., F.L.S.; Dr. J. BRAXTON HICKS, F.R.S., and others, which add to its high value. Lastly, Mr. D. MACKINTOSH, F.G.S., gives a paper "On the recency of the Close of the Glacial Period in England and Wales," which is followed by remarks by PROFESSOR T. RUPERT JONES, F.R.S., and others; and a Note on the Falls of Niagara, with diagrams illustrating the important Report of the United States Government Survey thereof: all who remember how many arguments have been founded upon incorrect data as regards the rate of the recession of these Falls, will recognise the result of the surveys as being a distinct gain to geological science.

To these, and to others who have added to the value of the present volume, the best thanks of the members and associates are due.

In conclusion, it may be permitted to recall the time when the Institute was founded, mainly because "the idea that Science and Revelation were directly opposed to each other, was spreading with fearful rapidity," and it was considered necessary "to investigate fully and fairly, but rigidly, all the facts and arguments put forth as truths newly discovered by Science, and regarded as being contradictory to the Scriptures."—(*Foundation Address*, 1865.) The volumes

of the *Transactions* contain a large number of papers and investigations carrying out this object, and the Institute has led the way—in which other Societies have at times followed—in bringing about a truer appreciation of the results of Scientific inquiry; and it is satisfactory to observe the many points on which the “Science” of twenty years ago has receded from controversy with Revelation. It is to be noted that this has been brought about—not by any ill-judged attempts to draw parallels between our own interpretations of Scripture and those of Science, which in its continuous advance has ever-changing phases, but—by patiently carrying on investigations in the manner set forth in the first object of the Institute.

FRANCIS W. H. PETRIE, *Capt.*

Hon. Sec. and Editor.

December 31, 1883.

JOURNAL OF THE TRANSACTIONS
OF THE
VICTORIA INSTITUTE,
OR
PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

ANNUAL GENERAL MEETING,
HELD AT THE HOUSE OF THE SOCIETY OF ARTS,
MONDAY, JUNE 30, 1884.

THE RIGHT HON. THE EARL OF SHAFTESBURY, K.G., PRESIDENT,
IN THE CHAIR.

Progress of the Institute.

1. IN presenting the EIGHTEENTH ANNUAL REPORT, the Council is glad to be able to state that, although the increase in the number of the Victoria Institute's Home Members and Associates has been impeded by those adverse influences which have affected every class and interest in the United Kingdom, yet the number of its foreign adherents is steadily advancing.

As regards the Institute's Philosophical and Scientific Investigations, an increasing number of those who are recognised as having especially studied each particular subject, have taken part therein.

The system under which papers are read, and the discussions and comments thereon published, now enables Members in the most distant parts of the world to contribute papers and to take part in their consideration.

2. The following is the new list of the Vice-Presidents and Council :—

President.—The Right Hon. the EARL OF SHAFTESBURY, K.G., F.R.S.

Vice-Presidents.

Sir H. BARKLY, G.C.M.G., K.C.B., F.R.S.	
Sir RISDON BENNETT, M.D., V.P.R.S.	Sir JOSEPH FAYRE, K.C.S.I., F.R.S.
W. FORSYTH, Esq., Q.C., LL.D.	PHILIP HENRY GOSSE, Esq., F.R.S.
Rev. ROBINSON THORNTON, D.D.	A. MCARTHUR, Esq., M.P.

Hon. Auditors.—G. CRAWFORD HARRISON, Esq. J. ALLEN, Esq.

Hon. Treasurer.—W. NOWELL WEST, Esq.

Hon. Sec.—Capt. F. W. H. PETRIE, F.R.S.L., &c.

Hon. For. Sec.—E. J. MORSEHEAD, Esq., H.M.C.S.

Trustees.—THE RIGHT HON. R. N. FOWLER (*Lord Mayor*). E. BAXTER, Esq.

Council.

ALFRED V. NEWTON, Esq.	The MASTER of the CHARTERHOUSE.
WILLIAM VANNER, Esq., F.R.M.S.	D. HOWARD, Esq., F.C.S.
S. D. WADDY, Esq., Q.C., M.P.	Professor H. A. NICHOLSON, M.D.
A. J. WOODHOUSE, Esq. M.B.L., F.R.M.S.	F. B. HAWKINS, M.D., F.R.S.
Rev. Principal RIGG, D.D.	J. F. BATEMAN, Esq., F.R.S.
Rev. Prebendary C. A. ROW, M.A.	The BISHOP of BEDFORD.
J. A. FRASER, Esq., M.D., I.G.H.	Admiral H. D. GRANT, C.B.
H. CADMAN JONES, Esq., M.A.	Rev. DR. TREMLETT.
Rev. W. ARTHUR, D.D.	Sarg.-Gen. GORDON, C.B., M.D.
Rev. G. W. WELDON, M.A., M.B.	R. H. GUNNING, Esq., M.D., F.R.S.E.
Rev. Principal J. ANGUS, M.A., D.D.	HORMUZZ RASSAM, Esq.
J. BATEMAN, Esq., F.R.S., F.L.S.	Principal WACE, D.D.

3. An increase of the Library and Library Fund is considered desirable.

4. The Council regrets to announce the decease of the following valued supporters of the Institute :—

The Rev. J. H. Barker, M.A., *F.M.*; Herr Joachim Barrande, *Cor. Mem.*; the Rev. Professor T. R. Birks, M.A. of Cambridge, *A.*, who made several important contributions to the Institute's proceedings; the Rev. Principal T. P. Boulton, LL.D., *M.*, whose earnest support and valued service as one of the Vice-Presidents have greatly added to the Institute's well-being; the Rev. J. W. Buckley, M.A., *A.*; the Rev. C. Bury, M.A., *A.*; Mr. J. Carr, *A.*; the Rev. W. C. Clarke, LL.D., &c., *M.*; Mr. J. F. Corkran, *A.*; Mr. R. J. Crosse, *M.*; the Very Rev. Dean H. T. Edwards, M.A., *Cor. Mem.*; Mr. W. R. Ellis, M.A., *F.M.*; the Rev. F. Exton, M.A., *A.*; the Rev. F. Garden, M.A., Sub-Dean of the Chapels Royal, *M.*; Mr. T. A. M. Gennoe, *M.*; Professor A. Guyot (Professor of Geology, Princetown Univ.), *A.*; Mr. E. Vernon-Harcourt, *A.*; Professor O. Heer of Zurich, *Cor. Mem.*; Mr. John Eliot Howard, F.R.S., *M.*, whose numerous contributions to the Institute's proceedings, and whose activity, first as a Member of the Council and afterwards as a Vice-President, have been of especial value; the Ven. Archdeacon A. Huxtable, M.A., *A.*; His Grace the Duke of Marlborough, K.G., P.C., *M.*; Mr. J. F. Meigs, M.D., *M.*; Mr. J. G. Middleton, *A.*; the Rev.

H. St. J. Reade, M.A., A.; the Rev. Robinson Scott, D.D., M.; the Rev. Canon R. V. Sheldon, M.A., A.; the Right Rev. Bishop A. Short, D.D., A.; the Right Rev. Bishop B. B. Smith, LL.D., Presiding Bishop of the American Episcopal Church, *Cor. Mem.*; Mr. Peter Spence, M.; Mr. J. H. Wheatley, Ph.D., F.G.S., *F.M.*; the Rev. F. Williams, B.A., A.; and Professor K. A. Wurtz, *Cor. Mem.* "in whom," to quote *Nature* (19th June, 1884) "the scientific world has lost one of its brightest and most energetic leaders."

* * M. Member; A. Associate; *F.M.* Foundation Member.

It is impossible to close this record without a special expression of regret that the Institute should have to chronicle the loss of three such warm supporters,—of world-wide fame in science,—as Barrande, Heer, and Wurtz; when such men are found in the ranks of the Institute, among those who declare, in the words of the title of Professor Stokes's last paper read before the Institute, that there is "the absence of real opposition between Science and Religion," no other proof is needed of the value of its work.

5. The following is a statement of the changes which have occurred during the past twelve months:—

	Life		Annual	
	Members.	Associates.	Members.	Associates.
Numbers on 21st June, 1883	43	33	319	554
Deduct Deaths.....			12	15
Retirements			11	29
			— 23	— 44
			<hr/> 296	<hr/> 510
Change to Life Membership... +1			—1	
			<hr/> 295	
Joined between June 21st, 1883, and June 30th, 1884	1	3	31	90
	<hr/> 45	<hr/> 36	<hr/> 326	<hr/> 600
	<hr/> 81		<hr/> 926	
Total.....	1007			

Hon. Correspondents (5 deaths) 84. Total..... 1091

Finance.

6. THE EARLY PAYMENT OF THE YEAR'S SUBSCRIPTIONS ALWAYS CONTRIBUTES TO THE SUCCESS OF THE YEAR'S WORK, and is constantly becoming more necessary. The Treasurer's Balance Sheet for the year ending December 31, 1883, audited by two specially-qualified unofficial Members, shows a balance debtor of £10. 12s. 9d., after the payment of every liability for the year. The amount invested in New Three per Cent. Annuities is £1,302. 18s. 9d.

7. The arrears of subscription are as follow :—

•	1879.	1880.	1881.	1882.	1883.
Members ...	2	4	1	8	10
Associates ...	2	3	6	16	30
	<u>4</u>	<u>7</u>	<u>7</u>	<u>24</u>	<u>40</u>

Meetings.

- MONDAY, DECEMBER 3.—“Recent Egyptological Research in its Biblical Relation.” By the Rev. H. G. TOMKINS.
- MONDAY, JANUARY 7.—“Cuneiform Inscriptions as illustrative of the Times of the Jewish Captivity.” By W. St. CHAD BOSCAWEN.
- MONDAY, JANUARY 21.—“Did the World Evolve Itself?” By Sir E. BECKETT, Bart. (Held at the Society of Arts’ House.)
- MONDAY, FEBRUARY 4.—“Nebuchadnezzar, King of Babylon—On Recently Discovered Inscriptions of this King.” By ERNEST A. BUDGE, M.R.A.S.
- MONDAY, FEBRUARY 18.—“Buddhism.”* By Rev. R. COLLINS. Remarks by Professors Leitner (Lahore), Rhys Davids, Mr. Rassam, Rev. S. Coles (Ceylon), &c.
- MONDAY, MARCH 3.—“Pessimism.” By W. P. JAMES, Esq.
- MONDAY, MARCH 17.—Lecture by S. E. B. BOUVERIE PUSEY, Esq. Remarks by Professor LIONEL S. BEALE, F.R.S., and others.
- MONDAY, APRIL 7.—“On the Prehistoric Factory of Flints at Spiennes.” By Rev. J. MAGENS MELLO, F.G.S.
- MONDAY, APRIL 21.—“The Evolution of the Pearly Nautilus.” By S. R. PATTISON, Esq., F.G.S.
- TUESDAY, MAY 6.—Vice-Chancellor J. W. DAWSON, C.M.G., LL.D., F.R.S., of McGill University, Montreal, on “Prehistoric Man in Egypt and the Lebanon.” Remarks by Professors W. WARINGTON SMYTH, F.R.S., W. BOYD DAWKINS, F.R.S., T. RUPERT JONES, F.R.S., T. WILTSHIRE, F.G.S., Colonel HERSCHEL, F.R.S., Dr. RAE, F.R.S., and others.
(Held at the Society of Arts’ House.)
- MONDAY, MAY 19.—“On Evolution by Natural Selection.” By Mr. J. HASSELL.
- MONDAY, JUNE 30.—ANNIVERSARY: Address “On the Inductive Logic,” by Professor R. L. DABNEY, D.D., LL.D., Texas University.
(Held at the Society of Arts’ House.)

8. The Meetings during this session have been held as usual; in three instances the numbers attending have made it necessary to take advantage of the kindness of the Council of the Society of Arts in lending their large theatre.

* It is to be noted that this paper, with the discussion thereon, has wholly exploded a theory, recently revived as an indisputable fact! in works and magazine articles by some English and foreign writers of note.

The Journal.

9. The Seventeenth Volume of the *Journal of Transactions* has been issued. It contains many papers and communications from those whose names and scientific researches are a sure guarantee for the "full and impartial" character of their investigations (object 1). They have sought to carry on their investigations strictly on the lines of the Institute; searching for the actual philosophical or scientific truth on all questions; and where any question bearing on Holy Scripture, and which had been turned against it, has been examined, the opponents of Revelation have often been disarmed by impartial inquiry, which has proved the baselessness of the alleged facts which were relied on to support erroneous theories.*

It has been gratifying to note the value placed upon the *Journal* as evidenced by Public Libraries in various parts of the world subscribing for the whole of the Institute's volumes.†

Lectures.

At home and abroad the *Journal* is increasingly used by Members and others to lecture from. The Institute is thus made more widely known, and its high objects carried out.

Translations.

The translation of portions of the *Journal* into foreign languages has long been a fact. Summaries of the Institute's

* The mention of this subject induces a reference to a statement which has often been made of late by the opponents of *all* religious teaching, namely, that the progress of Science has given a death-blow to all belief in the truth of the Bible, and that men of science no longer regard that book or the religious belief it inculcates. So false a statement might not be worthy of notice, but that it has been credited even by some charged with the regulation of education both at home and in our colonies, and is due only to ignorance of the tendency of true scientific inquiry. That men of the highest scientific attainments do not support such an idea has been amply shown not only in the important paper by Professor G. G. Stokes, F.R.S., already referred to, "On the Absence of Real Opposition between Science and Revelation," but by the utterances of men who are often claimed by the Secularists themselves as supporting their views, *e.g.*, M. Pasteur, one of the Institute's warmest friends and supporters, Professors Huxley, Tyndall, Sir C. Lyell, and others: their words upon the subject are given in the Preface to Vol. XVII.

† Many correspondents at home and abroad constantly testify to the great value of the Papers and Discussions in the Institute's *Journal*, on account of their careful and impartial character; and also by reason of their taking up those questions of Philosophy and Science said (notably by enemies) to militate against the truth of Revelation.

proceedings are now translated in India, and it is understood that arrangements are in hand for their publication in five leading dialects.

Members abroad may do much to help the Institute's aims by fostering the translation of the Transactions in their respective localities.

Additional Work.

THE SPECIAL EDITIONS.—The following works, being upon subjects of general interest and special importance, were last year added to those published in the People's Edition:—

“On the Absence of Real Opposition between Science and Religion,” by Professor G. G. Stokes, F.R.S.

“Considerations on ‘The Unknown and Unknowable’ of Modern Thought,” by Professor Lias, Hulsean Lecturer, Cambridge.

This year a paper by Sir E. Beckett, Bart., entitled “Did the World Evolve Itself?” has been so published.

THE SPECIAL FUND.—The advantage of this Fund to the Institute is exceedingly great. It is used—I. To extend the Institute's library of reference.—II. To make the Institute more known throughout the world.—III. For publishing a *précis* of its most popular papers.—IV. Also for promoting the publication in adequate quantities of the People's Edition of the Popular Papers, and their circulation through booksellers at home and abroad. It is to be regretted that the sum contributed to this Fund in 1883 was not sufficient to enable the Institute to accept the offer of booksellers in several colonies to introduce the People's Edition therein.

The immense exportation by the English Secularist Societies* of quasi-philosophical publications of an avowedly Atheistic character has been supplemented by these now being reproduced and even translated abroad.

The evil is happily being met in some colonies by the activity of many of the Institute's members, who speak in the highest terms of the valuable help the Institute's publications and organization have afforded them in so doing.

* The societies in question are also promoting the secularisation of education in India and the colonies, even in schools founded by Christians for mixed education.

Conclusion.

All will be thankful for the Institute's continued progress. A great means to this end has been the steady support of its own Members; and many a leader in the scientific world who has as yet not joined its ranks has generously borne a willing part in the work which it is doing *Ad Majorem Dei Gloriam*.

Signed on behalf of the Council,

SHAFTESBURY,

President.

SPECIAL FUND IN 1883.

		£.	s.	d.
LIBRARY	J. Walter Lea, Esq.	4	10	0
PEOPLE'S EDITIONS, &c....	G. Harries, Esq.....	20	0	0
	Sir H. W. Peek, Bart., M.P.	10	10	0
	J. E. Braithwaite, Esq.	10	0	0
	Lord O'Neill	5	0	0
	J. Walter Lea, Esq.	4	10	0
	R. H. Gunning, Esq., M.D., F.R.S.E.	3	3	0
	D. V. Steuart, Esq.	2	2	0
	L. Biden, Esq.	1	1	0
	H. C. Dent, Esq.	1	1	0
	J. Duncan, Esq.	1	1	0
	R. Heaketh Jones, Esq.	1	1	0
	H. Crichton-Stuart, Esq.	1	0	0
	J. Hornsby Wright, Esq.	1	0	0
	Lady A. Blackwood.....	0	10	6
	H. W. Monk, Esq.	0	5	0
		<hr/>		
		£62	4	6

The following Balance-Sheet was then read :—

EIGHTEENTH ANNUAL BALANCE-SHEET, from 1st January to 31st December, 1883.

RECEIPTS.				EXPENDITURE.			
	£.	s.	d.		£.	s.	d.
Balance brought forward...	...	...	...	Printing	...	...	376 12 0
Subscriptions:—				Binding	...	...	16 1 6
1 Life Member	...	21	0 0	Reporting	...	...	35 14 0
4 Life Associates	...	42	0 0	Stationery	...	...	51 7 5
			*63 0 0	Postage and Parcels (Home and Foreign)	...	...	150 3 9
2 Members, 1881	...	4	4 0	Advertising	...	...	32 7 2
7 " 1882	...	14	14 0	Expenses of Meetings	...	...	38 10 3
238 " 1883	...	499	16 0	Rent to Christmas, 1883	...	...	160 0 0
6 " 1884	...	12	12 0	Salaries for Year	...	...	79 9 6
1 " 1885	...	2	2 0	Housekeeper	...	...	18 4 9
21 Entrance-fees	...	22	1 0	Travelling Expenses	...	...	10 15 4
2 Associates, 1880	...	2	2 0	Coals	...	...	3 11 0
5 " 1881	...	5	5 0	Gas and Oil	...	...	6 16 10
15 " 1882	...	15	15 0	Water Rate	...	...	3 0 0
420 " 1883	...	441	0 0	Insurance	...	...	0 12 0
16 " 1884	...	16	16 0	Sundry Office Expenses	...	...	4 4 0
2 " 1885	...	2	2 0	Library, Books, Repairs, &c.	...	...	24 19 0
2 " 1886	...	2	2 0	Management	...	...	315 0 0
1 " 1887	...	1	1 0	Bankers' Charges	...	...	0 5 7
1 Year's Dividends on £1,302. 18s. 9d.	...		1,041 12 0				
New 3 per Cent. Annuities	...	...	38 3 0				
Donations to Library Fund	...	...	4 10 0				
" Special Fund	...	...	62 4 6				
Sale of Journals, &c.	...	...	98 3 5				
Balance, Dr.	...	...	10 12 9				
			<u>£1,327 14 1</u>				<u>£1,327 14 1</u>

We have examined the Balance-Sheet with the Books and Vouchers, and find a Balance due to the Treasurer of £10. 12s. 9d.

G. CRAWFURD HARRISON, } Auditors.
JOHN ALLEN, }

W. N. WEST, Hon. Treas.

* For Investment in 1881.

The HONORARY SECRETARY (Captain F. Petrie) said that, from a glance at the report, which was in the hands of all present, it would be seen that the Institute was steadily increasing, and earning the support of leading men of science, and that the list of papers read during the session was one of no ordinary importance. Among the new Vice-Presidents the name of Mr. Alexander M'Arthur, M.P., will remind many of the part he took in successfully floating the Institute in 1865, when he introduced seventy friends as members.

SIR J. LEFROY, K.C.M.G., C.B., F.R.S.—My Lord, I rise for the purpose of moving "That the Report be received, and that the thanks of the Members and Associates be presented to the Council, Honorary Officers, and Auditors for their efficient conduct of the business of the Victoria Institute during the year." In doing this I may perhaps be allowed to express my regret that, very unexpectedly to myself, I am in the position of occupying a post which certainly demands a worthier man, and which I really did not contemplate when accepting the invitation to speak on this occasion. I had flattered myself that any deficiencies of mine would be more than compensated for by that master of many branches of physical science, Professor Stokes, who was to have followed me, and the cause for whose absence we regret so much. One hundred and fifty years ago Bishop Butler said, "It has come, I know not how, to be taken for granted, by many persons, that Christianity is not so much as a subject of inquiry; but that it is now at length discovered to be fictitious." Everybody knows that Bishop Butler's immortal work was addressed to a refutation of this supposition, and to the endeavour to prove that there is a great deal in Christianity which deserves the very serious attention of every thoughtful and reasonable being. But I allude to this, in addressing the Victoria Institute, because I think it cannot be supposed that the objections of physical philosophers in Bishop Butler's day were present to his mind or had any share in the production of that condition of unbelief which he then remarked upon. I am one of those who are very much disposed to deny that they have in any special degree that effect now. I may, perhaps, be allowed to quote here so unfashionable an author as St. Paul. Nowhere has St. Paul said the *scientific* mind is enmity against God. On the contrary, he exhorts us to "prove all things," while he calls on the sophist and the man of letters and the disputer of the schools to lay aside their pride of intellect and to accept the Gospel as little children. But he does say that the *natural* mind is enmity against God. And this is equally true of the philosopher behind his crucibles and the divine in his study, and no truer of one than of the other. It seems that the acceptance or rejection of the Scripture is not a question of one pursuit or another. The sources from which the objections start vary from age to age as the incidents of reflection and study vary; but they have a common pedigree. Bacon, as every one will remember, says, "No man can search too far, or be too well studied in the Book of God's works or the Book of His Word, in divinity or philosophy." I am old enough to remember the publication

of the Bridgewater Treatises, which, perhaps, marked the beginning of that controversy which reigned so many years between geological teaching and the traditional interpretation of the Mosaic narrative of Creation. Well, did the divines convince the geologists, or did the geologists convince the divines? In my opinion, exactly the same thing as happened then will happen now in regard to the inquiries of modern science. The truths of God and the truths of nature must and will prevail. We should learn from these scientific discoveries the truth of those noble words of Richard Hooker, who says, "God is one, yea, very oneness and mere unity," consistent with Himself, in the endowments of man's intellect and in the properties of that physical creation which is the right object of man's reason and his faculties. There can be, there is, no contradiction, and no truths discoverable in one that are not reconcilable with the other. I would venture to remark that I think it is very much to be wished that certain phraseology which is commonly used, and is intended to convey a graphic expression of the views of one of two contending parties, should be employed as little as possible. When Sir John Herschel made use of an expression which has often been repeated, about the primordial atoms having every characteristic of "manufactured articles," he had not, as I imagine, the smallest idea of the currency that phrase would obtain; and when another scientific man, to mark his sense of the inadequacy and somewhat degrading character of the view he was opposing, characterised it as the "carpenter theory," I am persuaded that he meant no irreverence. These phrases, repeated in senses far remote from the context, only serve to promote differences we should all desire to reconcile, and are unworthy of the dignity and gravity of the cause which it is the duty of all believers to plead. The armoury of truth contains many weapons, from the rapier of the master of physical science to the sledge-hammer of the master of dialectics: this society has never wanted champions to wield either; and what is much to be desired, and is the special function of the Victoria Institute, is to summon, and enlist in its ranks, men eminent in every branch of intellectual pursuit, who, from their scientific attainments, are capable of meeting on their own level a comparatively few gifted minds who wander in darkness, solely, let us hope, because, and only so long as, they reject the Light of the world. (Hear, hear.) It is impossible not to feel a yearning desire that men of whose nobility of character we have the utmost consciousness,—whom it is impossible, in some instances, to know and not to love, and, in other instances, to know and not look up to and admire,—should not continue to the end of life the victims of what we believe to be mortal errors,—errors from which everybody's heart recoils, and as to which, I might almost say, the prayers of all Christian men should be addressed in the hope that the light, at first or at last, may reach their minds (hear, hear.) I, for one, persist in the belief that reach them it will. Still, I recognise this special function, this important duty, of providing champions of the first order to meet the Goliaths of intellectual combat. We also

require, I think, a perpetual succession of soldiers to encounter that crop of error which is always varying and shifting its ground, which is from time to time springing up in one place when extirpated in another, and which is in all instances to be pitied, and in many to be respected, especially where it is the product of an outspoken honesty, even if it will not accept the truth. Such a work does demand that the good and intellectual alike should concur in offering a rational solution of a rational difficulty. There is a paragraph in the report which speaks of the prodigious dissemination of quasi-philosophical and pseudo-scientific writings of an avowedly atheistic character that is going on, I apprehend, in India and in our colonies. I happen to have lived for many years in the colonies, and I confess that I have not myself been struck with that prevalence or domination of atheistic publications which is here alluded to. It may, however, have been of recent growth. I do not think that the clergy are the best men to remove the intellectual doubts that are started at the present day. Even granting that they are qualified for the task, I am not at all certain that they are the men to perform it. A certain degree of suspicion attaches itself to their advocacy. A society secular in its constitution, such as this Institute, embracing men of every profession, of every kind of experience, and belonging to every sphere of life, is what is really needed to meet the ever-varying and shifting forms of error which arise around us. The Victoria Institute has of late enjoyed several years of success. It is, however, far less known than it deserves to be, and I think we must all very greatly regret that many men of science, eminent in their respective walks, and undoubted believers in Revelation, have not already given it that support, which, nevertheless, they do give to the cause this Society represents. (Hear, hear.) It has been the most ardent desire of the Council to bring into its ranks men of this kind; and various men of eminence have been induced to join the Society and assist in the work it undertakes. Nevertheless, there is still a large clientèle from which other eminent advocates might be drawn for the purpose of strengthening our hands (Hear). I should like to mention a book which fell into my hands not long ago. It is written by a French judge, and is evidently the outcome of a judicial mind, being characterised by that brilliancy of logic which is so often displayed by French authors of that stamp. It is called *Religion de Jésus Christ*, and is the work of M. Auguste Nicolas. It is directed against a vast number of errors traceable to the writings of Renan, to whom is attributable many of the forms of infidelity that are now widely circulated. There is one thing from which we may take consolation, and that is, that, if this Agnosticism now prevails among us, so also are the efforts of the Christian advocates reviving, strengthening, and extending every day. As we see in that as yet mysterious science of electricity, resistance is the parent of light, so do we find that these various forms of error cause an illumination to break over the sphere of Christian belief, altering its aspect and character to a surprising degree. I have not ventured to address myself to any specific errors

which it is the duty of this Society to combat. I have rather desired to inculcate the doctrine of forbearance for error, and charity towards those who have not yet come to the light of divine truth. I am one of those who believe that the sphere of moral evil is narrowly circumscribed both in space and in time ; that there will be a time which will seem, as it were, to-morrow when it arrives, when moral evil will pass away from the face of God's creation, and when the blessedness and light of Christianity, with holiness and happiness as its fruit, will be the inheritance of every intelligent creature. (Hear, hear.)

Rev. Principal Rigg, D.D. (in the unavoidable absence of Professor Stokes, F.R.S.) seconded the resolution, saying,—It was only as I entered this room that I received the request to second this resolution ; therefore, all I can do is to perform this duty with such obviously suggested remarks as may not be inappropriate to the occasion. I cannot second the resolution, that the report be received and thanks accorded to the council and officers of the Institute, without congratulating our indefatigable honorary secretary, Captain Petrie, on the results that have been, in great measure through his exertions, achieved. (Hear, hear.) A more devoted secretary than Captain Petrie, one more entirely consecrated to the prosperity and interests of this Society, in every shape and form, or one who would give up his time—I may say his life—more absolutely to the duties he so ably performs, we could not obtain. (Hear, hear.) I am glad that, having had the opportunity during many years of knowing how he does his work, I am enabled to take advantage of the present occasion and give utterance to these words as at least a relief to my own sense of obligation to him. I think that we are all to be congratulated on the condition in which this Society at present stands. (Hear, hear.) It has of late years been growing in influence, and the number of its members has so rapidly increased, that not only have deaths and withdrawals been covered, but large accessions from year to year to the standing number of members enrolled in the Society have been realised. This, when we take into consideration all that it involves, is a matter for very great thankfulness. In this busy world, in this world of London engagements, wherein persons are continually solicited to embark in more undertakings than they can compass, and to connect themselves with more societies than they consistently ought to join, it is a great matter that we should have been able to keep up the number of our supporters, many of whom are from abroad. One would hardly have supposed that the subjects dealt with by this Institute would be popular, or the papers in its Journal widely read. Many of those papers are on topics that are more or less abstruse ; none of them are sensational ; while the bulk have relation to an immediate and intimate knowledge of science, which is not yet very extensively spread among the various populations of the world, even in the case of those which are Christian ; therefore, I think that, under all the circumstances, we have great reason to be thankful for the position in which the Institute

stands. (Hear, hear.) It is not my business to speak of the good it has effected. There was a time when I had the honour of delivering the Annual Address, and I then endeavoured to show what was the course actually taken and what was the position the Institute held in regard to the great battle of truth—Christian and Divine truth—which we are all bound to engage in fighting. I will not, therefore, refer to that subject, especially as Sir J. Lefroy has dealt with it in a very effective manner; but I must be allowed to make reference to some of our members who have passed away from among us during the year. I would first mention Dr. Boulton, who was a man of great influence, high character, and a most valuable member. (Hear, hear.) We have lost in him a faithful and influential friend, and we should be very glad if there were many more of his calibre and standing to swell our number and increase our power for good. We have also lost a man whose name I cannot mention without feeling how very much the two past generations have owed to him. He was one who held some opinions with which all Christian people would not agree; but he was a learned man, an able man, a devoted man, a man of science, and a very humble Christian: I allude to the late Professor Birks. Besides him, we have lost Mr. John Eliot Howard. His certainly is a name not to be mentioned in connexion with this Institute without awakening memories of the exceeding value of his services and of his connexion with us during many years. He was a man of admirably accurate knowledge, and of great force and elasticity of thought. He held a firm grip on the truths which most needed to be held fast, and was one of our strong pillars. (Hear.) We are very glad, at all events, that his name is not unrepresented in our midst at the present moment. (Hear, hear.) There are others who might also have been mentioned, some of them corresponding members of the Society, and men of great Continental eminence; but those I have enumerated were well known to us, and men who have added to the splendour—if I may use so strong a word—of that galaxy of bright and noble names which, if you will look at the list, render very brilliant indeed the roll of the Victoria Institute. (Hear, hear.)

The resolution was then put and agreed to.

Mr. D. HOWARD, V.P. Inst. Chemistry.—On behalf of the council, I beg to thank the meeting very cordially for the vote of thanks it has just passed. I can only say that the desire of the council is to carry on the business of the Institute on the lines that have been so eloquently laid down in moving this resolution. I do not say we have never made mistakes, but I will say that our work has not been lightly done, nor without a very keen sense of its importance and responsibility; and if any of our members do not approve of our work, we would say, Why do you not come and help us to do better? There is, I think, great need for the work of the Institute. Clearly as it is shown, year after year, as time and thought go on, that there is no opposition between the works of God in nature and

the word of God in Revelation, there is yet what St. Paul spoke of, the opposition of science, falsely so called, which it is the great object of this Institute to combat. It is not so much with the great leaders of scientific thought with whom we have to deal, but rather with their followers, who pervert their utterances, who misuse the doctrines of science and religion, and bring about a seeming clash where there is in reality none. (Hear, hear.) In the spread of knowledge at the present day the great point to be attained is to keep clearly before the minds of those to whom the facts of science often come for the first time that they are not antagonistic to the faith of their youth. (Hear, hear.) These things, rightly understood, are not antagonistic to the faith of their forefathers, but are only two forms of the same truth. I would say, therefore, to the theologian, Remember that in quietness and confidence is strength—do not be frightened by some seeming contradiction; while to the would-be scientist I would say, Do not be in a hurry—no half-knowledge of science, even in its best-known branches, should teach you that, by some seeming contradiction, you have upset the faith of ages. And I would ask, Is it a new thing that there should be this seeming antagonism? We need only turn to the early Christian apologists to find that almost the same battles were being fought in the first three centuries as we are fighting now, and we may safely have confidence that, although the loss may be to us if we are on the wrong side, the truth will not suffer. The truth shall prevail; but there is one danger to be guarded against, and it is this: that there are many scientific men who feel profoundly sure that there is no antagonism, yet, as they never bring their minds to see what the alleged antagonism seems to be, they cannot get into sympathy with those who fancy there is an antagonism, and thus are led to stand entirely aloof from the controversy, having a true sense of its hollowness, but at the same time a false idea that it does not matter. Hollow as it is, it does matter if a false view of religion and science is spread abroad, as it has been spread abroad, among the half-educated classes. (Hear, hear.) Our object is, as far as we can, to help the establishment of those principles which have been so well laid before us this evening, both among those who clearly understand the subjects dealt with; and those who only half understand them, well knowing that the truth will prevail, and that we need not fear the result, if we are but faithful to that truth. (Applause.)

The following address, by Professor R. L. DABNEY, D.D., LL.D., of Texas University, was then, in the author's absence, read by Mr. D. Howard, V.P.I.C.,—a member of the Council.

THE INDUCTIVE LOGIC.

By Professor R. L. DABNEY, D.D., LL.D., Texas University.

MUCH is said in glorification of the Inductive Logic, or Method of Induction; little is understood of its true nature. No stronger testimony against the unauthorised character of much that is called "Physical Science," under the cover of sophistical inductions, can be cited than that of John Stuart Mill (*Logic*, vol. i., pp. 480, 481, 7th London edition):—"So real and practical is the need of a test for induction, similar to the syllogistic test for ratiocination, that inferences which bid defiance to the most elementary notions of inductive logic are put forth without misgiving by persons eminent in physical science as soon as they are off the ground on which they are familiar with the facts, and not reduced to judge only by the arguments. And as for educated persons in general, it may be doubted whether they are better judges of a good or bad induction than they were before Bacon wrote. . . . While the thoughts of mankind have, on many subjects, worked themselves practically right, the thinking power remains as weak as ever; and on all subjects on which the facts which would check the results are not accessible, as in what relates to the invisible world, and even, as has been seen lately, to the visible world of the planetary regions, men of the greatest scientific acquirements argue as pitifully as the merest ignoramus."

In these days, when the followers of physical research imagine so often that the theologians are in a state of active hostility against them and their sciences, it is well that we can cite this accusation from one who is as remote as possible from an alliance with theologians. This able witness proves, at least, so much, that every beam of light which can be thrown on the true nature of the inductive logic, though slender, is desirable. It may help, not only to clarify the sciences of matter, but to reconcile the conflict,—if any such exists,—between them and philosophy and theology.

This essay is written, however, mainly in the interest of that cause to which the Victoria Institute devotes itself,—the defence of Holy Scripture against those doubts which modern

physical science suggests. This science professes to glory in the Inductive Method. I seek to humble, and, indeed, righteously to discredit it, in so far as it is overweening and incorrect, by showing that in these places it has failed to comprehend and to obey its own professed method. If the real nature of inductive demonstration can be evinced,—if it can be proved that its method is, indeed, far different from the one so often usurped by rash physical speculations, that it is more difficult and far more rigid in its requirements,—then the wings of so-called physical science will be clipped; its flight will be restrained within more safe and wholesome limits; science will itself be a gainer in accuracy and solidity; and the apparent collisions between science and revelation will all disappear, as it is shown that they lie only in these regions of illicit flight, from which science should have been restrained by her own logical methods.

It would be instructive to trace the history of the discussions and definitions as to what induction is. We should find the professed modern followers of Lord Bacon, while conceding to Aristotle the honour of formulating the syllogism, claiming that induction is a different and a more fruitful mode of proving general truths, whose description the world owes to the great Englishman. We should find Aristotle's supporters, as Geoffrey St. Hilaire, Grote, Whately, Hamilton, asserting that he also taught the nature of induction, and that in the syllogistic form. We should find each author, whether Baconian or Peripatetic, differing from every other as to what inductive proof really is. This will be sufficiently evinced by citations from the last two logicians named; for they show us the state of the theory after all the preceding agitations of it,—after the best consideration of a Newton and a Whewell.

According to Hamilton, inductive proof proceeds thus, in form of syllogism :—

Major.—This, that, and the other magnet attract iron.

Minor.—But this, that, and the other magnet represent all magnets.

Conclusion.—∴ All magnets attract iron.

To this Whately justly objects that the second proposition is manifestly and always *unproven*. It is vain to attempt to superinduce a syllogistic form upon a mental process, at the cost of introducing, as a premise, a proposition which must regularly and necessarily be without proof. Whately proposes this, then, as the more correct form :—

Major.—What belongs to the observed magnets belongs to all magnets.

Minor.—But these observed magnets attract iron.

Conclusion.—∴ All magnets attract iron.

The hearer will observe that Whately's process only inverts the order of the first two propositions in Hamilton's; for Whately's first is only a different way of expressing Hamilton's second, and the order of the propositions given by Whately seems obviously the correct one. But the fatal difficulty remains, whether we place the assumption in the rank of a first premise or a second, how did we evince that a property found true by observation of a few magnets is true of all magnets not yet observed? The syllogism virtually reasons in a circle, assuming in a premise what it professes to prove in its conclusion. Nor does it appear how this vice can be cured, except by ascertaining the presence of the property by actual detailed observation in each individual magnet to which the conclusion ascribes it in its predication. And then the syllogism is worthless, for it tells us nothing except what was already ascertained. So Galileo. "Vincenzio di Grazia objected to a proof from induction which Galileo adduced, because all the particulars were not enumerated. To which the latter justly replied, that if induction were required to pass through all the cases it would be either useless or impossible: impossible when the cases are innumerable, useless when they have each already been verified, since, then, the general proposition adds nothing to our knowledge."

But if we infer the property as to each individual thing in the class, before it has been verified in each, the illation is fatally obnoxious to that rule of logic that the conclusion from particular (or partial) predications cannot be universal. Two particular premises can only give a particular conclusion. How is this vital defect in the induction to be cured? The answer usually given by the more thoughtful logicians is:—That the inductive inference really owes its validity to another universal truth, which the reasoner implicitly carries in his mind—the belief in *the uniformity of Nature*. In the case of the magnets, for instance, the uniformity of nature authorises the physicist to infer that a property which actual observation finds in some magnets belongs to all.

But this, as Mr. Mill well remarks, does not relieve the difficulty. What authorised the mind to assume this uniformity in nature? Observation certainly does not authorise it; for the appearances of nature exhibit boundless and unexpected varieties. Does one plead—that yet, we believe these seeming varieties are all regulated by natural laws? The difficulty recurs in this question: How do we become assured that this seemingly capricious and diversified nature

is regulated by law? And a more difficult question is: How do we prove certainly which laws regulate given classes of sequences in nature? No apparent regularity in any given number of sequences is enough to prove a certain law, as Lord Bacon has shown; for this would be merely what he calls *inductio per simplicem enumerationem*, which he has proved never to be demonstrative of itself. But the logic of inductive demonstration is necessary to prove that such enumeration of agreeing cases of sequence does, or does not, express a real law. Thus, it appears that demonstrative induction must be pre-requisite, on this theory, to ground our belief in the uniformity of nature. And yet the theory makes that belief the *à priori* ground of all our inductions. This view, then, resolves itself into the absurdity of assuming, as first premise of our argument, that which we only learn in its conclusion.

How, then, can an argument from a part of the class to all the class become valid, against the fundamental rule of logic? Not a few logicians, among whom is Sir William Hamilton (*Lectures on Logic*, 32, end), have conceded that induction can never give more than probable evidence of a law. He asserts that it is impossible for it to teach, like the deductive syllogism, any necessary laws of thought, or of nature. Must we concede this? Is the problem hopeless, the gravity of which these introductory paragraphs indicate? Must we admit that all the sciences of induction, and all the practical rules of life, which are virtually inductive, are for ever uncertain; presenting us only probabilities, of which wider investigations may bring us a refutation? This we are loth to admit, even as true friends of physical science. We claim that inductive argument may have demonstrative force, when properly constructed. Such a view must be substantiated, or the proud name of *Science* should be candidly surrendered as to all the supposed laws of natural phenomena. Real demonstration cannot be grounded in uncertainties, however much these may be multiplied. Moreover, the common sense of mankind rejects the statement that the best inductions are only probable. On sundry of them we unhesitatingly stake our welfare and lives; and experience never fails to confirm their truth. The question then recurs, the great question of the inductive logic: How does the inference seemingly made from the some, or the many, to the all, become valid for the all?

As Mr. Mill has pointed out (very inconsistently for his own philosophy), demonstrated truths can only be proved from premises containing necessary principles. To construct a

method of inductive logic, we must recur to the correct principles of rational psychology. In the *Examination of the Sensualistic Philosophy of the Nineteenth Century* (pp. 265, 272) it was shown that the deductive syllogism could be successfully defended against the famous criticism of Locke and his followers, only by recognising the necessary *à priori* and intuitive judgments of the reason as first premises. Locke had objected, that since the syllogism is confessed to be faulty which concludes more in its third proposition than is contained in its premises, no syllogism can establish any truth not known before. It must, then, be either sophistical or useless. In dissolving this objection, it was granted that it would have real force if the mind is entitled to hold no general propositions except the empirical ones derived from mere observation. But admit that the mind is entitled to other judgments than the empirical,—to the intuitive, namely,—and that they are universal, and the way appears in which the synthesis of propositions becomes a valid and fruitful source of new knowledge.

A similar foundation must be found for the inductive reasoning. The sensualistic psychology cannot furnish it. Hence the inconsistencies of Mr. Mill's treatise on the Inductive Logic, at once the most incorrect and the most correct which has appeared, combining the truest insight into the inductive problem with the clearest contradictions of himself. The theory that all valid judgments are empirical must be surrendered; the intuitive and primitive judgments of the reason must be recognised, as immediately giving us truths which are not only valid, but necessary and universal. Among these are the all-important axioms,—that every effect must proceed out of some efficient *cause*: that the concrete efficient contains *power* to produce the effect: that the same efficient cause, other conditions remaining, must produce the same effect. The theory of inductive demonstration to be asserted, then, is the following [which will commend itself sufficiently, in the absence of those details of discussion, which are forbidden by the limits of an essay]:—

Permanent properties, or attributes of the things in nature, are potential powers, or energies, which become actual when the suitable relations are established between them and other properties or potential energies.

A regular law of nature is nothing else than the expression of the presence of an efficient cause. Its regularity is the immediate consequence of the self-evident judgment, "Like causes, like effects." The problem is to discover, not the "physical cause," or the "conditional cause or causes," or

the "occasional causes" of effects; but to discover the efficient cause.

Hence, in every demonstrative induction of any general law, our task is simply to distinguish the seeming antecedents in observed sequences, from the efficient causal antecedent. As soon as this latter is found, the law of nature is found; for, we repeat, a natural law is no more than the expression of an efficient cause.

Hence, the reasoning process in every valid induction is a syllogism,—as Whately asserted,—but not an invalid one, reasoning from the some to the all:—a syllogism, in which the major premise is always the necessary and universal judgment of cause, and the minor is some truth of observation. And the argument yields general truths, because the premises always contain a universal truth; demonstrated conclusions, because the premises contain necessary truth.

And thus the inductive logic is reconciled with the demonstration that *all* our valid processes of argument must be reducible to syllogism. The problem, then, is to distinguish between those observed sequences which certainly will hold in the future, and those which will not. And *between the antecedent and consequent of the former sort, there must be known to be a necessary tie; for it is self-evident that only a necessary tie can ensure the certain recurrence of the second after the first.* But it is equally evident, both to the human reason and experience, that nature has no necessary tie between her events, except that of *efficient cause*. Hence it appears that the sole remaining *problem of Induction is to distinguish the causal sequences we observe, from the accidental.* Whenever we see what we term an effect, a change, a newly beginning action or state, this necessary law of the reason assures us that it had its cause. Had not that cause been efficient of that effect, it would not have been true cause. It must, then, have communicated power. That power will always be efficient of the same effect, when it acts under the same conditions. Hence, when we have truly discriminated the cause from the mere antecedent, the *propter hoc* from the *post hoc*, we have found therein a certain and invariable law of nature. We have read nature's secret. We are now enabled to predict her future actions; and so far as we can procure the presence of the discovered cause and conditions, we can command nature, and produce the effects we desire. This, and this alone, is *inductive demonstration*.

The reader is now brought to the proper point of view to understand why the induction from a mere enumeration of agreeing instances can never rise above probability; and why

it does, as we admit, raise a probable expectation of recurrence in the future. *So far as the observed presence of a given antecedent, seemingly next before the consequent, raises the probability that we see in that antecedent the true, efficient cause; just so far have we probable evidence that the consequent will follow it in future.*

But ordinarily the observed sequences can only raise a probability that we have found in the antecedent the true cause; for this reason: *that we know there are often such things as unobserved, or latent, or invisible causes.* For instance, the old empirical chemists knew that something turned the metal, when sufficiently heated, into the calx. They talked of an imponderable agent which they named *phlogiston*. They had not suspected that oxygen gas was the cause; for this gas is transparent, invisible, and its presence in the atmosphere had not been clearly ascertained. Had the frequently observed sequence, then, led them to the conclusion that *heat* was the efficient and sufficient cause of calcination, they would have concluded wrong. Further experiment has taught us this error: some metals, as potassium, calcine rapidly in the midst of intense cold, if atmosphere and water be present. None of the metals calcine under heat, if atmosphere and water are both excluded, as well as all other oxygen-yielding compounds. Here, then, is the weakness of the induction by the mere enumeration of agreeing instances: *We have not yet found out but that an unobserved cause comes between the seeming antecedent and the effect, the law of whose rise we wish to ascertain.*

And here is the practical object of all the canons of inductive logic, and of all the observations and experiments by which we make application of them; to settle that question, *whether between this seeming antecedent and that effect, another hitherto undetected antecedent does not intervene?* Just so soon as we are sure there is no other, whether it be by many observations or few, we know that the observed antecedent is the true efficient cause; and that we have a law of nature which will hold true always, unless new conditions arise, overpowering the causation. Not only is it possible that we may be assured of the absence of any undetected cause between the parts of the observed sequence by a few observations; we may sometimes reach the certainty, and thus the permanent natural law, by a single one. To do so, what we need is, to be in circumstances which authorise us to know certainly that no other antecedent than the observed one can have intruded unobserved. Such authority may sometimes be given by the testimony of consciousness. For instance, a party of explorers

are travelling through a Brazilian forest, where every tree and fruit are new and strange to them. One of the travellers sees a fruit of brilliant colour, fragrant odour, and pleasing flavour, which he plucks and eats. Soon after, his lips and mouth are inflamed and swollen in a most painful manner. The effect and the anguish are peculiar. His companions, who have eaten the same food, except this fruit, and breathed the same air, do not suffer. This traveller is certain, after one trial, that the fruit is poisonous, and unhesitatingly warns his companions with the prophecy: "If you eat this fruit, you will be poisoned." What constitutes his demonstration? His consciousness tells him that he has taken into his lips absolutely nothing since the previous evening that could cause the poisoning, except this unknown fruit. He remembers perfectly. He has tasted nothing except the coffee, the biscuits, and the dried beef which had been their daily and wholesome fare. But, *no effect—no cause*. This fruit, the sole antecedent of the painful effect, *must therefore be the true cause*; and must affect other human lips, other things being the same, in the same way. His utter ignorance of the fruit does not in the least shake his conclusion. The traveller has really made a valid application of the "method of residues." He has argued validly from a *post hoc* up to a *propter hoc*.

THE METHODS OF INDUCTION.

We are now prepared to advance to the correct definition of the inductive demonstration. It may be, in form, an enthymeme, but always, in reality, is a syllogism, whose major premise is the universal necessary judgment of cause, or some proposition implied therein. This view of the inductive proceeding corresponds with that conclusion to which the reflection of twenty centuries has constantly brought back the philosophic mind: that all illative processes of thought are really syllogistic, and may be most completely stated in that form; and that, in fact, there is no other process of thought that is demonstrative. The history of philosophy has shown frequent instances of recalcitration against this result, as those of Locke, of Dr. Thomas Brown, and of their followers; but their attempts to discard syllogism, and to give some other description of the argumentative process of the understanding, have always proved futile. The old analysis of Aristotle still asserts its substantial sway; and successive logicians are constrained, perhaps reluctantly, the more maturely they examine, to return to his conclusion—that the syllogism gives the norm of all reasonings. If our

definition of the inductive demonstration, then, can be substantiated, it will give to logic the inestimable advantage of reconciling and simplifying its departments. The review of opinions given by us at the outset revealed this state of facts : that logicians felt, on the one hand, that no reasoning process could be conclusive, unless it could be shown to conform, somehow, to syllogism ; and on the other, that the custom and fashion of distinguishing induction from deduction as different, or even opposite, kinds of argument, had become prevalent, if not irresistible. Consequently, the most of them, following the obscure hints of their leader, Aristotle, endeavoured to account for induction as a different species of syllogism, in which we conclude from the some to the all, instead of concluding from the universal to the particular or the individual. And then immediately they were compelled, by the earliest and simplest maxims of their logic, to admit that such syllogisms are inconclusive ! And they have to confess this in the face of this fact : that this induction is the *organon* of nearly all the sciences of physics and natural history ; sciences whose results are so splendid, and so important to human progress ! Such a result is not a little mortifying and discreditable to philosophy. But we hope to show that it is a needless result. It will appear that induction is not only syllogistic, and therefore within the pale of demonstrative argumentation, but regularly and lawfully syllogistic. Mill has had a sufficiently clear conviction of the necessity of accomplishing this ; to teach (vol. i., pp. 362-365) that the conclusions of this species of reasoning can only become solid when grounded in a universal truth. This, he thinks, is our belief in the invariability of the law of causation. But he then (p. 345) very inconsistently adds, that this universal truth itself is but a wider induction, which approaches universal certainty sufficiently near, by reason of its breadth. This universal and necessary truth, we hope to show, is the intuition of cause for every effect, along with the truths involved therein.

To effect this, the methods of induction must be explained. When we speak of observed sequences, we mean a set of observed, resembling cases where one state or change seems immediately to precede another change, or "effect," which we are studying. These cases may be observed by ourselves, or witnessed to us by others. The *fact* of the sequence is the only material thing. But, first, one's own observation must be honest and clear, and his record of the case exact. He must not see his hypothesis in the facts, but only what occurs there. And, second, a case taken on testimony should be

fully ascertained by a judicial examination of the evidence. Having now this set of agreeing instances, more or less numerous, which gives us, as it stands, only an induction *per enumerationem simplicem*, our task is, so to reason from it as to discriminate the *propter hoc* from the *post hoc*. The result of this task, when successfully performed, is to give us a "law of nature," which is such because it is a law of true, efficient causation. It is to effect this we need the methods of logical induction. In stating them, the chief guide will be Mr. Mill, whose discussion in this point seems the most complete and just.

As his excellent treatment has made the methods of induction familiar to scientific men, little more will be needed for present purposes than the mention of them.

1. The "method of agreement" is applied when in several observed cases a result, X, is preceded by different clusters of apparently immediate antecedents. In one instance, A, B, and C are observed to precede X; in another, A, D, and E precede X; in a third, A, F, and G precede X. On comparing all the cases, we conclude that A was, all the time, the true, efficient cause of X, because it alone was present each time X arose. The canon of the "method of agreement," then, is, Whichever of observed antecedents remains *alone unchanged* next before the effect is the true cause thereof. But this canon may yet fail to give us a demonstrated result (a), because a latent antecedent may lurk unobserved among A, B, C, D, E, F, G, not detected in either instance; (b) because one efficient may produce X at one time and another at a different time; and (c) two or more causes may have combined to produce X.

2. "The method of difference" is applied to a set of instances when, if one of a given group of antecedents is present or is absent, a given sequent is correspondingly present or absent. A and B and C are followed by X and Y and Z. But when the antecedents are B and C (A being absent) only Y and Z follow, X being absent. A appears the *cause* of X, so far, that is, as we can *know* that the second group of antecedents, after which the one effect, X, failed, differed from the previous group *only* in the *one circumstance*, the absence of A, we know that A efficiently causes X.

Yet the demonstration may not be exclusive, because A may be only one possible cause of X; for often similar effects are the results of different causes, as heat results from chemical reaction, or from electricity, or from percussion, or from compression, or from friction, or from vital energy.

3. The method of "agreements and differences" combines

the evidence of the last two. The antecedents A, B, and C are followed by the sequents X, Y, and Z, and A, D, and E by X, V, and W; but wherever A is absent from among the antecedents,—as B, C, or B, F, G,—X is also absent from among the sequents. A is the cause of X.

4. We have the “method of residues.” We have as a group of antecedents A, B, and C, followed by the sequents X, Y, Z. A has been proved by some other canon to cause only X; B, similarly, causes only Y. Then, though C and Z remained unknown by experiment, inference would teach us that C is the efficient of Z.

5. The method of “corresponding variations” remains (so clearly asserted by Sir Isaac Newton in his “*Regulæ Philosophandi*”). Let it be supposed that X seems the regular sequent on A. If, in every experiment, X increases or diminishes as A does, A is efficient cause of X. For, affecting the antecedent could not of itself regularly affect the consequent except through a causal tie. Were not heat the cause of expansion in the mercury, this liquid in the thermometer would not regularly expand as heat is increased, and contract as it is diminished.

INDUCTION IS SYLLOGISM.

It is now time that we returned and redeemed our promise to show that induction is but the old syllogistic logic, inasmuch as each demonstrative process is but an enthymeme, whose real major premise is the intuitive judgment of cause, or some corollary thereof. We are glad to have the powerful and very emphatic testimony of Mr. Mill to this doctrine. In Book III., chap. 21, he says:—“As we recognised in the commencement, and have been enabled to see more clearly in the progress of the investigation, the basis of all these logical operations is the law of causation. The validity of all the inductive methods depends on the assumption that every event, or the beginning of every phenomenon, must have some cause; some antecedent, on the existence of which it is invariably and unconditionally consequent.”

Let us submit this assertion to a more critical examination; and first, as to the method of agreement. In the first case, or cluster of cases, we saw $A+B+C$ followed (possibly among other effects) by X. In the second, $A+D+E$, and in the third, $A+F+G$, are also followed by X. The reasoning, rigidly stated, now proceeds thus (and that it may proceed strictly, it is necessary to make the supposition that no other causal antecedents are present except A, B, C, in the first case, &c., which, in practice, it will usually be very difficult to

know) : in the first case, the cause of X must have been either A or B or C, or some combination of them. Why ? Because it is a universal *à priori* truth that there is no effect without a cause. This step thrown into a formal syllogism will be :—

1. No effect can arise without a cause.

2. But X arose preceded only by A + B + C ;

Therefore A or B or C, or some combination of them, must be cause of X.

So, we prove that, in the second case, A + D + E, and in the third, A + F + G, must have caused X. But next we construct another syllogism :—

1. A cause must be *present at the rise* of the effect (immediate corollary from the intuition of power and efficiency in cause).

2. B and C were absent in the second and third cases ; D and E were absent in the first and third cases ; F and G were absent in the second and third cases, while yet X was always present ;

Therefore, none of these, but only A was cause of X each time.

Thus, by the successive examination of all the methods of induction, it is shown that they are all virtually syllogistical. The simple and satisfactory conclusion is thus reached, which unifies our theory of logic, and which also secures for careful and sufficient inductions that apodeictic character which is so essential to make them scientific propositions, and which we yet saw denied to them by so many great logicians. Induction and deduction are not two forms of reasoning, but one and the same. The demonstrative induction is but that species of syllogism which, getting its minor premise from observed sequences of facts, gets its major premise from the intuition of cause.

It is to be lamented that Mr. Mill, after teaching so much valuable truth, and displaying so just an insight up to this point, should then assert a view of our universal judgment of cause, which, if true, would destroy his own science. He believes, after the perverse metaphysic of his father, Mr. James Mill, and of the school of Hume, that the mind has no such universal *à priori* judgments. He believes that our general judgment of cause is itself empirical, and is gotten simply by combining a multitude of inductions *enumerationis simplicis*. But these, he admits, are not demonstrative ; and the whole and sole use of all the canons of induction is to lead from these invalid colligations to certain truths. And he has confessed that this is only done by assuming the universal law of cause ; so that his conception of the whole inductive logic is of a process which assumes its own conclusion as its

own premise! That he is not misrepresented will appear from the following citations from his *Logic*, Book III., chap. 21:—"As was observed in a former place, the belief we entertain in the universality throughout nature of the law of cause and effect, is itself an instance of induction, and by no means one of the earliest which any of us, or which mankind in general can have made. We arrive at this universal law by generalisation from many laws of inferior generality," p. 100. "Is there not, then, an inconsistency in contrasting the looseness of one method with the rigidity of another, when that other is indebted to the looser method for its own foundation?" p. 101. "Can we prove a proposition by an argument which it takes for granted?" p. 96. This question, Mr. Mill then says, he has "purposely stated in the strongest terms it will admit of," in order to reject the doctrine of a belief in causation as a necessary, intuitive law, and to assert his (as we think, erroneous) doctrine, which attempts to make the inductive process prove its own fundamental premise. His apology for this violation of the very first principle of logic and common sense is, that the belief in causation, while only an empirical induction, is "an empirical law coextensive with all human experience; at which point the distinction between empirical laws and laws of nature vanishes, and the proposition takes its place among the most firmly established as well as the largest truths accessible to science," p. 103.

One question dissipates this attempted solution. Is a process of inductive demonstration only valid, then, to one whose empirical knowledge "is coextensive with all human experience"? No. Mr. Mill, for instance, when explaining the proof of a natural law by the "method of difference," made these two correct statements: that this method is rigidly conclusive when its conditions are observed; and that it is by this method the common people really infer the commonly known laws. It appears, then, by his own statement, that a beginner in inductive reasoning, long before he has widened his knowledge until it is "coextensive with all human experience," may make, and does make, inductions to general laws that are valid. Whence does he procure his universal major premise? Again: the empirical knowledge of the most learned observer in the world bears but a minute, almost an infinitesimal, ratio to the multitude of consecutions of events which take place outside of his knowledge. The idea that mere empirical observation can ever establish a law as universal is therefore delusive. It proceeds upon the supposition that, as the number of agreeing observed instances is widened, the probability grows towards a certainty that their

agreement expresses the universal law, because the cases actually tested bear a so much larger ratio to the cases not tested. But it must be remembered, if the intuitive and original character of our judgment of cause be denied, we have no means, except the empirical, to know whether the cases of sequence still untested, and therefore unknown, will conform to our supposed law or not. And the belief arising out of this supposed *calculus* of probabilities is utterly deceptive. For the number of cases tested, however large, is still, in the mind of the most learned physicist, infinitesimally small, compared with the number of the unknown cases occurring in nature, not to speak of the more multitudinous cases in past ages. When the physicist has observed for years, the number of instances empirically tested does bear a larger ratio to the number with which he began. True, and this is precisely the delusion which cheated Mr. Mill's mind. But it is the increased ratio of the empirically known to the unknown which is necessary, for the purpose of even grounding a probability. But this still remains infinitesimally small.

Again, the postulate of the uniformity of nature would not be, on Mr. Mill's theory, even one that might be provisionally assumed, because it is obnoxious at its first suggestion, and throughout our provisional course of inquiry, to apparent contradictions. To the merely empirical eye nature appears variable and capricious almost as often as she does constant. So that, had our inductions only an empirical basis, instances of apparent testimony against this general premise might multiply as fast as instances of seeming concurrence in its favour. The real reason that the results of induction are not thus embarrassed is that true induction is not merely empirical, as Mr. Mill supposes. Once more, if the general premise underlying each case of induction is only an assumption, then it is *a priori* possible it may involve an error. If it does, why may not that element of error be multiplied and spread itself through the body of connected processes in a geometrical degree? Then the body of supposed science is always liable to turn out, after all, like the Ptolemaic hypothesis of the heavens, an inverted pyramid, an ingenious complication of propositions forced into a seeming harmony by their common trait of involving the radical error. Science has often shown that a hypothetic structure may be widely built out, and may stand long in apparent strength, and yet be overthrown.

We close this refutation with this testimony from Esser, adopted by Hamilton (*Logic*, Lec. 32, end): "It is possible only in one way to raise induction and analogy from mere probability to complete certainty, viz., to demonstrate that the

principles which lie at the root of these processes, and which we have already stated, are either necessary laws of thought, or necessary laws of nature."

Hamilton and his German teacher, Esser, here do two things, one of which is right and the other is wrong. They utterly refute Mill's attempt to ground an apodeictic induction on his false metaphysic as to man's primitive judgment. This is the right thing. They also deny to the inductive logic all apodeictic character. This is their wrong teaching. Surely this conclusion is as much against common sense and the universal practical convictions of mankind, as it is against their experience. Men assuredly believe that they have a multitude of certain demonstrated inductions. They are right in believing so. On these practical inductions, simple and brief in their processes it may be, yet real inductions, men are proceeding with absolute confidence, in their business, every day of their lives. It is by an induction that we all know we shall die. Does any man think his own death only a high probability? All know death is certain.* Here are all the modern triumphs of physical science, which civilised mankind regard as much their assured possession as the pure propositions of geometry. No one regards their laws as of only probable truth. The world entrusts its wealth, health, life, to them with absolute faith. But most of the laws of physics are truths of induction. Hamilton's conclusion, then, while right in denying a foundation for their certainty where Mill and his predecessors propose to place it, in the uniformities of nature, is wrong in allowing to the inductive logic only probable force. He, like the rest, overlooked too much the concern which our primary judgment of causation has in these processes. They did not correctly apprehend the relation of this great intuition to them. It is humbly claimed that, in explaining that relation by means of a rigid and exhaustive analysis of the inductive methods, this branch of logic has been reconciled with itself, and with the practical convictions of mankind. Its complete exploits of proof are discriminated from its incomplete ones. The former are lifted out of their uncertainty, to the prerogative of the syllogism, by showing that they do not conclude from some to all; but from a universal and necessary judgment to particulars and individuals. Why should it be thought a strange thing that this primary judgment should be found to hold so fundamental a place at the very corner-stone of the sciences? The farther philosophy is rightly pursued, the more is the unique importance of this

* That is, humanly speaking.—Ed.

great norm of the reason, *Ex nihilo nihil*, in all the departments of human thoughts disclosed. It is the regulative notion of the reason.

In defending the intuitive quality of this judgment, then, we are defending the very being of the natural sciences, and also of theology. This is the principle of the reason, on which both the cosmological and teleological arguments for the being of a God are founded. Hume, the great finisher of the Sensationalist metaphysic, saw, that in denying to the mind an intuition of cause, he was undermining those arguments. Teach with him, that this judgment is only an empirical one, learned from experience; and his cavil against those arguments,—that the world, if an effect, is one too singular and unique to be argued about as we argue of common, experienced effects,—at once becomes formidable. To undermine theology was his purpose. But we have shown that his metaphysic also undermines the sciences. The inductive method, on this philosophy of Hume, becomes as baseless and uncertain as he wished theology to be; and its doctrines are degraded from certainties to guesses. The history of the inductive sciences illustrates this influence. When they were prosecuted by the Boyles, Newtons, and the illustrious company of Christian physicists, whose metaphysic was that of Cudworth, Clarke, and Butler; they gave the world those splendid and solid results which constitute the wonders of modern civilisation. But when the votaries of the inductive sciences, like Dr. Huxley, have embraced the empiricism of Hume, Comte, and Mill, they stagger and grope, and give the world, in place of true science, the vain hypotheses of evolutionism and materialism. In asserting the true nature of induction we have been pleading the cause of science, no less than of theology.

FINAL CAUSE AND INDUCTION.

If we may judge from the gentleman last named, the hostility of the empirical school is particularly directed against the theistic doctrine of Final Causes. They see how intimately it is connected with the teleological argument for the being and attributes of God. But the doctrine that each thing has *some* final cause; that a wise Creator did not make it aimlessly; this is the main guide of induction. It is by its light we are guided to the discovery of the laws of cause and effect. The illustration given by Dr. Harvey's discovery of the circulation of the blood is equally splendid and familiar. He himself informed Boyle that he was led to it by the fact that he found in the veins, membranous valves opening towards the heart, and in the arteries similar valves opening the other

way. He reflected that Nature never does anything in vain (which is the same thing as saying that every structure has some final cause); and he was thus taught that the blood flows inward to the heart from the parts of the body by the veins, and outwards by the arteries. In like manner, the doctrine that every structure has certainly *some* function is the very lever of the construction of comparative anatomy. But what is this function but the final cause of the structure? To discover the function is the main task this science proposes to itself. This is the end pursued through all the comparative dissections. And when the function, or final cause, is discovered, the physiologist knows that he has discovered a general law, not only of that variety or species, but of all species possessing that organ. Cuvier argued: No animal devoid of canine teeth will ever be found with its feet armed with prehensile claws. Why? Because the function of the canine teeth is to masticate living prey; but nature, after depriving the mouth of such teeth, and equipping it only with graminivorous teeth, will never perpetrate the anomaly of arming the feet with claws whose function is to catch living prey. Such is the character of the arguments of this great science. Deny the doctrine of final cause, and it has no basis.

Indeed, if final causes are discarded, there is no longer any basis for any inductive demonstration. The object of this process, in every branch of science, is to discover a *general and permanent law*. How do we accomplish this? Let the admitted answer be repeated: It is accomplished by distinguishing from among the seeming antecedents of a given effect, that one which is the "invariable unconditional antecedent" (Mill). For the very nature of inductive logic is to assure us that when we have truly found this invariable unconditional antecedent in some cases, it will infallibly introduce that effect in all similar cases. This is what is assumed as the "natural law." But how are we authorised to infer this? By our general premise concerning "the uniformity of nature." But the system which discards final cause also denies that there is any intuition of a necessary law of cause.

Now, if there were no other ground for invariable unconditional sequence, would an intuitive expectation of the universality of any law of cause be better grounded than this empirical one? Let this be pondered (our main effort has been to show that this expectation is intuitive, and not merely empirical, and that for this reason the inductive inference holds good). Could the intuitive or *à priori* reason consistently hold this expectation if it saw in a true cause no efficient

power? Obviously not. This would be to expect the first link certainly to draw in the second, when there was no certain connexion between them. But, again, if efficient power in a second cause is not the expression of any final cause whatsoever, in any intelligent agent, would the reason ever regard it as a *certain* connexion between the parts of the sequence? Obviously not. For, the first lesson the reason has learned about the material bodies, which are the seats of the *phenomena*, is, that they are blind, inert, unintelligent. All the education the reason has received about these bodies is, that they are *subject to variation*. Our whole discussion is about "effects." But what is effect save change? The very problem of all science is, *Nature's changes*. How did the reason learn from nature's perpetual variations, then, to trust in the invariability of nature? And especially when this nature is material, and too blind to have consciousness either of her own changes or stability, of her observance or violation of her supposed laws? To explain this intuitive expectation of the invariability of causal changes, as a healthy act of the reason, there must be somewhere a sufficient cause of the law in nature. And the only sufficient cause is the final cause which is the expression of the intelligence which made and governs nature. We believe in the stability of a natural law, when we discover it, only because we believe in *the function* which a stable intelligence has designed in endowing that thing with that law. Why are we so certain that "like causes always produce like effects"? Because the same reason tells us that the power deposited in that natural cause was put there by a supreme intelligence, and, therefore, for a final cause; and that the wisdom which planned will certainly regulate, on the same consistent plan, the machinery of causation there established. The postulates of theism are necessary to ground the inferences of induction. The doctrine of divine purpose, and that of the stability of the law of true causes, are the answering parts of one system of thought. When this is asserted, it is not designed to retract the proposition so often asserted as fundamental, that our belief in the regularity of the law of cause is intuitive, or to represent that judgment now, as a *deduction* from the propositions of theism. What is meant is this: that the Creator, while He did fashion the human reason so as to be intuitively necessitated to believe in cause, also gave it, that He might be consistent in so fashioning it, the evidence of His own causation and intelligent design in all his works. The two judgments are complementary to each other; the suppression of the latter would leave the other inconsistent. *God's constancy to his own ends* is the only

explanation of that stability, which he has necessitated us to expect in the laws of the second causes by which he designs to effectuate those ends. Or else, the alternative explanation must be, that the causal ties in physical sequences are eternal and necessary, essentially immanent in the very being of the material bodies acting and acted on, *and this is fatalism*. Let the Huxleys and Comtes, then, choose between this absolute fatalism and the doctrine of final causes. They have no other alternative.

THE APODEICTIC INDUCTION.

In concluding this exposition, then, it is necessary to remark on the looseness and confusion which have prevailed in the use of the term "induction," as of the word "analogy." 1. Sometimes the mere colligation of resembling cases has been called induction. 2. Sometimes the name has been given to the mere tentative inference from the some of the observed cases to the all, including the unobserved. 3. Sometimes it has been used to describe what is in reality no *process* of argument at all, but the mere formulating in a single proposition of a class of observed facts, as when, having seen by inspection a given predication true of each and every individual separately, we predicate it of the class. Thus Hamilton, more than once. 4. But the *inductive demonstration* is wholly another and a higher matter. It is the valid inference of a law of nature, from observed instances of sequence, by applying to them a universal necessary judgment, as premise, the intuition of cause for every effect. It has been often said, as by Grote's Aristotle, for instance, that induction is a different process from syllogism, and is, in fact, preliminary thereto; that induction prepares the propositions from which syllogism reasons. This is true of that induction, abusively so-called, which we have just numbered first and third. It is not true of inductive demonstration. It has usually been assumed that while induction is a species of reasoning, it is a different, and even an opposite species from deduction. The first and third actions of the mind, abusively called inductions, do, indeed, differ from deduction; but they are not argumentative processes at all; they do not lead to new truth, either inwards or downwards. They merely formulate in general terms, or in general propositions, individual precepts or individual judgments already attained. True induction, or inductive demonstration, is simply one department of syllogistic reasoning, and is as truly deductive as the rest of syllogism; giving us, namely, those deductions which flow from the combination

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of the universal and necessary intuition of cause, with observed facts of sequence.

This explanation of the nature of the Inductive Logic powerfully confirms the cautions of its wisest practitioners, as to the necessity of painstaking care in its pursuit. It is a method of ascertaining truth closely conformed to the divine apophthegm, "With the lowly is wisdom." It is evidently a modest science. Only the greatest patience, candour, and caution in observing, and the most honest self-denial in guarding against the seduction of one's own hypotheses, can lead to safe results. After this review, the charge which Mr. Mill brought against much of the pretended inductive science of our day, quoted by us at the outset, appears every way just. What else than unsafe results can be expected from persons who have never truly apprehended what the inductive argument is; when they venture to employ it, with the most confused notions of its real nature, and under the *stimulus* of competition, haste, prejudice, and love of hypothesis? Time and the future have a huge work of winnowing to perform upon the fruits of the busy mental activity of this generation, before the true wheat is gathered into the garners of science.

As Moses and our Saviour epitomised the Ten Commandments into the one great law of Love, so the canons of valid induction may be popularly summarised in one law. It is this: *So long as all the known facts can be reconciled with any other hypothesis whatsoever than the one propounded as the inference of the induction*, even though that other hypothesis be no better than an invention or surmise, *the inductive argument is invalid to give a demonstration*; it yields only a probability. This rule receives an excellent illustration from the legal rule of "circumstantial evidence" in criminal trials. And the illustration is so good for two reasons: that there is so close a resemblance, in many points, between inductive reasoning and circumstantial evidence; and that the great men who, as jurists, have settled the principles of the legal science of evidence, have brought to their problem the ripest human sagacity, sobered and steadied by the consideration that these principles were to have application, in dreadful earnest, to the lives and liberty of all citizens, including themselves.

But the learned judge instructs the jury that the prosecution are bound to show, not only that the hypothesis of A. B.'s guilt *may satisfy* all the observed facts, but to demonstrate absolutely that *it alone can satisfy* them; so that the logical result shall be, not only that we may, but that we must, adopt this, as the only true explanation of the circumstances proven.

And the judge will authorise the defence to test that point thus: If another hypothesis than A. B.'s guilt, which, as a proposition, is naturally feasible, can be even invented, though unsupported by any array of proved facts, which may also satisfy the facts established before the court, the prosecution have failed to establish the guilt of the accused. The ingenuity of the lawyers on that side is no less than was supposed, and the probability of A. B.'s guilt may remain; but it is not *proved*, and the man must be discharged.

We also learn that unless the induction be positively demonstrative, it must give way in the presence of any adequate, intelligent, parole-evidence, affirming a different cause for the phenomenon. Another more popular reason supports this conclusion. Does one say, "The living witness may be dishonest or deceived; but my facts and inductive argument are wholly dispassionate, impartial, and valid"? He forgets that his facts also have no better foundation than the professed eye-witnessing of some human witness. Does he say, "They are facts; for I saw them"? He is but a human witness. Or if he derives his facts from the observations of others, they are mere human witnesses. But the facts are a premise of his inductive logic. The inference cannot be more valid than its premise. It thus appears that it is wholly unreasonable to claim superiority for an induction over testimony, for this is as though one should claim that "testimony is stronger than testimony." The only consistent meaning would be the arrogant assumption that "my testimony is honest and the other's dishonest." This conclusion, that competent testimony is superior to any except an absolute, exclusive induction, is practically accepted by all sound physicists. Let all the facts previously known tend to refer the effect to a supposed cause, so that the scientific world is almost prepared to accept it as a law; if one competent observer arises, testifying to another actual cause for the effect, seen by him to produce it in a single case, the other hypothesis is withdrawn. For science admits that here is a case which cannot be reduced under it. An illustrious instance will be remembered in the first telescopic examinations of Galileo. He saw that the planet Venus was *gibbous* at a time and in a way she would not have been according to the Ptolemaic hypothesis. That one observation, with men of true science, made an end of the Ptolemaic theory. The only alternatives were to surrender it, or to say that Galileo did not see Venus gibbous at that part of her orbit.

A very important application of these logical principles is to the inductions of geologists concerning the mode of forma-

tion of *strata* and mineral deposits. The rule has been recalled, that the law, "Like causes, like effects," does not authorise its converse, "Like effects reveal the same cause." For, as is so obviously clear, two independent causes may produce effects exactly similar. Now, much of the supposed inductive reasoning of treatises on geology is, in reality, but an application of this vicious converse. Observation shows us a given stratum of rock or indurated sand and slime, resulting from sedimentary deposition from water. The inference is, therefore, all stratified rocks are sedimentary. And some treatises on geology assume this unsafe and invalid surmise so absolutely as to use the words "sedimentary" and "stratified" as synonyms. A very plain and useful instance of this sophism is given by the case of the Italian savant, who inferred an immense age for the strata in a volcanic spot of South Italy, by examining a well. The sides of this little excavation showed certain strata of volcanic earth superposed on lava. The savant's assumption was, that all this earth was formed gradually by disintegration of hard lava; and as the process is notoriously slow, the thickness of the beds of loose earth denoted a vast lapse of time. Now, had he been certain that disintegration was the *only* cause of volcanic earth, his inference might have been worth something. But the heedlessness of his logic was put to shame by a very simple statement of fact, made by the peasants. Disintegration of hard lava was not the only cause of volcanic earth. Another cause was dust and ashes, showers from the neighbouring volcano. These peasants had been actual eye-witnesses of several such emissions, which, guided by a favouring breeze, had covered their fields with an inch or two of new soil in a single night. And by the simple light of this other cause, which the great savant had not thought of, it was clearly shown that the accumulation, for which he required many scores of centuries, had been the actual work of about two hundred years.

To the candid mind these hints are enough. The most careful observer is most fully aware of these facts: that our knowledge of the terrestrial energies which have exerted themselves in our globe is imperfect; that the grade of speed at which known forces are now observed to act, may have been exceedingly different at other times and under other conditions of temperature and climate; that the causations which would need to be accurately determined, in order to settle many of these physical questions, were probably complicated beyond all reach of our observation and ascertainment at this late day.

4. The evolution theory presents a most interesting and instructive case for the application of this logic. Its main points are: that what we supposed to be distinct *genera* of animated beings did not originate in the creation of first progenitors, from whom all the subsequent individuals descended by a generation which transmitted, by propagation, precisely the properties essential to the *genus*; but that higher *genera* were slowly evolved from lower; that the causes of the differentiations wherein the more developed individuals differ from their less developed progenitors, are to be found in three unintelligent physical influences,—heredity, the influence of the environment on the being's powers, and the survival of the fittest. The observed facts from which this hypothesis claims to derive its induction may be grouped under these general statements: that in fact the known *genera* of animated beings form a continuous ascending scale, from the most rudimental up to man, the most highly organised; thus suggesting the ascent of organisation along this ladder, from a lower stage to a higher; that a multitude of organs and limbs are actually seen to grow from their infantile to their adult states, under the interaction of their environment and the instinctive animal exertions of them; that the conditions of animal existence are, in the general, such that the individuals possessing most of the natural vigour, qualifying them to reproduce a strong or a developed progeny, are most likely to survive, while the less qualified perish; and that observed facts in the breeding of animals present cases in which the rule does not hold that "Like produces only its like," but often it produces the slightly unlike, differing from itself by a slight shade of improvement or deterioration. These facts, the theory claims, when a very long time is allowed for the slow and irregular, but in the main progressive, action of the forces they disclose, prove that all animated *genera* can be accounted for as the ultimate progeny of the most rudimental protozoon.

The task in hand here is not to give a full refutation of this theory, but to criticise it in the light of the logical principles established, simply in order to see whether it is an induction. It appears at once that it has no claim to come under the head of either method of induction, not even of the loosest, the method of agreement. Indeed, it cannot be said to have a single *instance* (much less an agreeing multitude) in the proper sense of inductive instances. To resort for simplification to our notation, let A stand for the aggregate of supposed evolutionary agencies, which are the combined cause; let X stand for the effect, a *new genus*. There has not been pre-

sented one instance, as yet, in which A has been followed by X, even seemingly, A being accompanied or unaccompanied by other antecedents, B, C, D, etc. The utmost which can be claimed is, that a few "varieties" have been evolved, but no permanent *species* or *genus*, which can meet the tests of generic character. Even these "varieties" cannot be proved to be the effects of the supposed evolving physical causes, since it does not appear that they have evolved themselves, except when these unintelligent influences were guided by a rational purpose, as that of the stock-breeder or bird-fancier. Again, the theory fails as to man, the rational, and the highest result, of the supposed evolution,—in that its energies are unintelligent and blind; but man has a reason. There must be enough in the cause to account for the effect. And it fails as to man and all the lower animals, in that their organs all display, even down to the lowest, the work of thoughtful design and the intelligent selection of final cause; whereas the evolving energies are all blind and unintelligent. Nor has the first instance been found where the influences of "environment" have evolved a single new organ or physical faculty, in the sense necessary to the theory. The facts observed are these: that when nature has implanted the generic organ or function by regular propagation, but in the infantile state, the "environment" has presented the occasion, not the cause, for its growth, by its own exercise up to its adult strength. The fish's fin grows by beating the water, in this sense; the bird's wing by beating the air; the child's arm by the wielding of his toys. But where is the first instance that the environment has evolved a new organ over and above the generic model? Where has environment placed a new fin on a fish's back, or an additional finger on a youth's hand? The instances ought to be of this nature, to give any show of an induction. And the organ evolved ought to become not merely an individual peculiarity, but a permanent trait transmitted uniformly by propagation.

The canon of the inductive logic requires, again, that all other possible causes, other than the one claimed in the hypothesis, shall be excluded by at least some of the known instances. But the theistic account, which is made entirely probable, to say the least, by arguments in morals and natural theology, presents another sufficient cause in the creative power and wisdom. Since the origin of species antedates, confessedly, all human observation and history, this cause for it is probable, until atheism is demonstrated. Even were the evolution theory an induction from real instances, in which these evolving influences were truly adequate to the effect,

there would be no valid induction until the theistic cause was positively excluded by a demonstration of atheism. And to offer the conclusion which would flow from such an induction, when completed, as sufficient for that atheistic demonstration of the non-existence of a Creator, which alone would complete the induction; this would plainly be "reasoning in a circle." The conclusion would have to be assumed, in order to make out the process leading to it. But supposing there may be a Creator of perfect wisdom and power and full sovereignty, it is always supposable that he may have seen reasons for clothing his creatures with those very qualities on which evolution argues against a Creator. Is it said that the regular gradations of organised life suggest the belief that the higher forms were evolved from the lower, along the stages of this ladder? But the theistic hypothesis suggests, with more probability, the belief that the Creator had reasons for filling all the stages of this ascending scale with *genera* and *species* which are yet distinct. To lift the former surmise to the faintest approach to an induction, the latter hypothesis must be precluded.

Once more, the scheme is fatally defective in that it has *no verification*. Not a single new *genus*, or even individual, has been presented, or can be evolved by experiment, to confirm the hypothesis. Indeed, it is impossible, from the nature of the case, that there can be a verification, since the advocates of the scheme admit that the latest evolution, that of man, was completed long before the earliest human history. The most that can be said for this theory is, that it is an ingenious collection of guesses, which bear a fanciful but deceptive likeness to real analogies.

So far the pretended argument goes in its simpler form. Its manifest invalidity constrains some evolutionists, as Le Comte, to surrender it. But these assert that deeper researches into the parallelisms of organic relations give a truly inductive ground for their theory. It is claimed that the likeness between the stages which Agassiz (chiefly) disclosed in embryology, paleontology, and our existing gradations in natural history, now called the ontogenic, the phylogenic, and the taxonomic gradations, establishes evolution by a solid induction. The animals now upon the earth form a gradation, through the four grand divisions of radiates, molluscs, articulates, and vertebrates, from the lowest and simplest up to the most complicated and highest. So, evolutionists assert, the living creatures made known by the fossils as once having lived in paleontologic ages, show the same gradation. And third, the transformations through which the foetal organisms,

even of the highest species, pass from the *ovum* to the adult, exhibit the same gradation. The proposed argument is, that these analogies give an inductive proof that *species are evolved from species* by an equally natural law of evolution.

Let it be again observed that all we need attempt, in criticising this supposed argument by the principles of induction, is to show that the process is invalid. And we would preface the farther criticism by the *caveat*, that we do not admit the parallelism of the three sets of instances, in the sense claimed by evolutionists. The paleontologic series, for instance, in order to support this pretended evolutionist induction, should be a series of higher and more complete animal forms succeeding the more rudimental in time. But such it is not. At each paleontologic period, some of the four groups of living creatures are found coexisting, in at least some types of each, and not merely successive. The palæozoic strata are found to contain vertebrate fishes, along with the radiates and molluscs of that first period. And, if we may trust Agassiz's assertion, there is no evidence that the embryonic changes of any individual animal of a higher group exemplifies all the gradations from the lowest group up to its own. These mutations of its foetal life only illustrate fully the gradations of the species in its own group.

But, waiving for the time these questions of fact, we show, in this pretended induction, this vital defect: it mistakes an analogy (an imperfect one) in the method of action of certain vital energies for a causal identity. The essential link of a demonstrative induction is lacking. If we take, for instance, the embryonic order of development, all that is proved by the multitude of cases colligated is, that the individual *ova* are all endued with a vital energy which causes, and thus insures, the growth of each individual into the matured type of its own species. For such, and such alone, is the result, as observed. In no single case has an individual *ovum*, be its analogy of mode of development to that of other species what it may, resulted in an evolution into a different species from its own. Hence, there is not a particle of inductive evidence that this causal energy which we see at work is competent to such evolution. Each individual gives an instance of a development through an embryonic series? True. But in every instance the development terminates within the strict limits of its own species; and the induction from the latter set of facts is precisely as broad and as inexorable as from the former.

Again, the analogies noted all receive their sufficient solution from another hypothesis, namely this, that they are the expressions of a common plan of thought, by which the

creative Mind voluntarily regulates its creative and providential actions. Now, as we saw, the conclusion from an induction is not demonstrated, unless the instances collected preclude all other probable, and even possible, hypotheses. Here is the other hypothesis, not only probable and intrinsically reasonable, but, in the light of other arguments, certain—the theistic one: that the reason why the vital energies wrought in paleontologic creatures in a way analogous to the way they work now is, that the same God created and governed then, and that he sees good reasons for following, in the different ages, similar types of working. It might be conceded that the analogies under discussion, if viewed alone, would be insufficient to prove the existence and action of a God. Yet they do suffice to show that solution a probable one. This alone is enough to prove the evolutionist conclusion invalid.

The argument, then, is not a demonstrative induction. Here our logical criticism might stop. But it will be instructive to show how it is confirmed by the positive refutation which other laws and facts of natural history inflict upon the evolution theory. This is excluded, as a tenable explanation of the organised universe, by the following instances, which do have, what the previous analogies have not, an application in strict accordance with the principles of induction.

1. No existing species has displayed a particle of tendency towards the change in a single truly specific attribute, within the longest period of human history. The mummies, as well as the effigies, of the living creatures associated with the oldest Egyptian remains, were found by Cuvier and by Kunth specifically identical with the same creatures now existing in Egypt. Researches into antiquity have everywhere led to the same result. Now, if evolution of one species from another is to be inductively proved, some instances at least tending to the result must be adduced. The fact that all human knowledge through three or four thousand years presents no approach to a single instance, is fatal.

2. In paleontology, each species, so far as known from its fossils, has remained absolutely fixed during the continuance of its period. It is very true, that a species may be found in a subsequent cosmical period, showing resemblances to, and improvements on, a given extinct species of the previous cosmical period. But this fact makes nothing for evolution, because science shows that there has been, between the two periods and their two sets of living creatures as two wholes, a clear breach, interrupting the natural and regular forces of reproduction. The evolutionist must show some instance where, within the limits of some one cosmical period, a

different species has been naturally evolved from one simpler than itself.

3. If the existence of the higher forms of life were accounted for by slow evolutions from the lowest, then the paleontologic history should unquestionably present us with this state of facts : First, with a period of the simplest forms, as the radiates ; then, afterwards, with a period of more developed forms, as molluscs ; then with the still higher, as the articulates ; and then with a period of the highest. But the state of the facts is exactly the opposite. All the paleontologic periods give us some of the four groups contemporaneously.

4. The methods of nature, in the formation of the four groups, are essentially different. While some of the species belonging to one group have a higher organisation than others, they all display a community of plan in their structure. But when we pass to another group, we meet a different plan. Hence we infer that even if we could do what has never been done, find an actual case of the evolution of a species from a lower one of the same group ; the barriers separating the groups as grand divisions, would still be insuperable. Their several plans of structure are too different for the transmutation of one into another.

5. Men speak of organic life as if its different species formed one regular and continuous series "from the monad up to man." This is found to be a misconception. The animal kingdom is composed of a number of partial series. When the attempt is made to range all these in one single continuous series, fatal dislocations appear. The line of progress is not a continuous ascending line.

6. The theory of evolution assigns great force to the influence of "environment," in developing organs into those of a new species. But naturalists tell us that they find a number of the most diversified types existing and prospering together for long ages, under identical circumstances. But, were evolution true, the identity of the whole environment ought to be working an assimilation of the various types subjected to it. Again, identical species are found persisting for long ages under the most diversified environments. These facts show that there has been deposited within each species its own form of vital energy, which resists differentiation, and insists, against any influence of a changed environment, on reproducing only its own type. The rational inference is, that either each species is eternal, an impossible proposition, or else each points to an extra-natural Power, which deposited its specific vital energy in it at its beginning.

And that *Power*, in the last place, was *Mind*, because every adaptation of organs to their functions, every reappearing analogy of structures in successive cosmical periods, every relation instituted between the individual and its environment or its fellow-creatures, discloses *thought*. But evolution is claimed to be only a physical process.

Such is the use of the observed facts of the animal kingdom, as sanctioned by the true principles of the inductive logic. The result of this correct colligation is to show that evolution cannot be true.

Let us make another application of these logical principles, and that the most important of all. It concerns the limits of the *à posteriori* inference from similarity of results to identity of cause, concerning the origin of the structures composing the crust of our earth. If theism is admitted to be, not demonstrated, but even possible, then, according to the rules of induction, such inference from naturalness of structure to natural origin is inconclusive. This follows from two of its rules: first, the analogical argument from similarity of result to identity of cause, must give way before competent and credible parole evidence. The supposed but invalid argument is,—we see natural agencies producing this and that structure; therefore, all similar structures are of natural origin. But if there may be a creative God, *there* is a different sufficient cause for the origin of the earlier. And if a witness appears who may be naturally competent to testify, his testimony wholly supersedes the evidence of the supposed analogy. The only way to uphold it is to attack the credibility of that witness. If his credibility is not successfully impeached, the analogical argument must yield before it.

But such a parole-witness appears in the book known as the Christian Scriptures. It assumes to testify that there is a Creator, and that he here gives his own witness to his supernatural creation of the first structures. The value of any induction from naturalness of traits to a natural origin of those structures, must depend therefore upon the other question: whether this witness is competent and credible. Some persons attempt to evade their logical obligation here by saying that these are theological questions with which physical science, as such, has no concern; that they restrict themselves properly to the lights of this department, and, in assigning a natural origin to these structures, speak only for science. But this is a violation of the principles of natural induction, which must necessarily include some adjustment of the relations between analogy and testimony; seeing the truth of the very facts, claimed as analogical, itself rests on testimony.

Farther, the questions whether there is a Creator, and whether there have been creative causations, enter into this argument, not as theological, but as natural questions. In their relations to the inductive problem, they are as purely physical questions, as the question whether a given rock is the result of fusion or sedimentary deposition from water. A moment's reflection will show the justice of this statement. And hence it follows that an *à posteriori* analogical argument on this topic is entirely fragmentary and inconclusive, until the claims of this parole-witness are entertained and adjusted. The historical and the physical parts of the argument cannot be thus rent asunder and legitimately pursued apart.

The second rule of induction which applies to show this reasoning invalid, is that pointed out on p. 10. If there may be two antecedents, either of which is competent efficiently to produce an effect (naming one of them A, and the effect X), the closest possible induction can only prove that all A's will, *cæteris paribus*, produce X; but cannot prove that all X's are produced by A. Now, *until atheism is demonstrated*, another competent cause for natural structures may be supposed as possibly existing in the existence and action of a God. And whatever is the strength of the probable or demonstrative evidence that there is a God, from whatever valid quarter drawn, there is just so much probability of error in the attempted induction, which assigns a natural origin to all structures. To attempt to exclude the divine cause by the force of this *à posteriori* analogy is to reason in a circle; because the validity of the analogy depends wholly on the prior exclusion of the divine cause. Second, a wise Creator must have had some final cause guiding his action. We should not be so presumptuous as to surmise in advance what particular final cause prompted a given creative act, but when his own subsequent action has disclosed it we are on safe ground. It is always safe to conclude that the object for which a wise and sovereign Creator produced a given thing is the object to which we see him devoting it. When, therefore, we see him in his subsequent providence subjecting all things to the reign of natural law, we may safely conclude that, when he created them, he designed to subject them to natural law. But that which is to be ruled by natural law must needs be thoroughly natural in traits. Hence this Creator must have made the first structures, which in their origin were supernatural, in their properties entirely natural. Whence it follows that the inference from naturalness of qualities to a natural origin would be, as to those structures, wholly worthless. Let it be repeated also: that whatever probability or certainty there is

of God's existence, from any source of evidence, just so much evidence is there of this defect in the naturalistic argument. Or, in other words, to make it conclusive, its advocate must *demonstrate* (not surmise) the truth of atheism. But John Foster has shown that this is impossible.

Third. The argument is peculiarly conclusive as to living creatures. If there was a Creator, he created the first individuals of a species to be, by reproduction, the heads of the species. But in order to do this, these first parents must have been created natural. What are the qualities connoted by any name of species? The most accurate answer which the science of natural history itself can make is: they are precisely those which are transmitted regularly from parents to progeny in the propagation of the species. Then, these first individuals, in order to fulfil their final cause, to be the heads of their species, must have been, while supernatural in origin, as thoroughly natural in qualities, as any of their natural offspring.

Fourth. If this be denied, then we must assign a natural parent before the first parent of each species. Thus we should be involved in infinite series, in a multitude of instances, without cause external to themselves, a result which science herself has discarded as an impossible absurdity. Suppose, for explanation, that an observer has found some part of the very organism of one of those first heads of species, which, on the theistic scheme, was directly created by God. He would, of course, find in this fossil every property of the natural structure. Yet he cannot infer thence a natural origin for it, because on the hypothesis it is absolutely a first thing. But suppose that he may assign for it a natural origin. That origin then will be, propagation by birth from prior parents. And should a fossil organ of that parent be found, the same argument would apply again! Thus we should be driven to a ridiculous *regressus*. It is concluded, therefore, with the most perfect logical rigidity, that the argument from naturalness of structure to a natural origin is inconclusive, until the impossibility of creative agency in any age prior to authentic human testimony is demonstrated.

Fifth. This absurd *regressus* may be shown in a general way, by testing this analogical argument upon the "nebular hypothesis," that guess which the atheist Laplace suggested as only a possible hypothesis for the origin of the universe, and which some Christian physicists now seem so ready to adopt, without proof, as the real account of the matter. Let us suppose the scientific observer from some other system watching this vast incandescent mass of "star-dust," rotating

around an axis of motion, with which the nebular hypothesis begins. If he uses the analogical reasoning we are criticising, he must proceed thus: Matter is naturally inert; *momentum* must therefore be derived from some prior material force. This rotary motion, which the nebular hypothesis supposes to be the first state, cannot be the first state. Again, vapour implies evaporation. Sensible heat suggests latent heat. Hence this other first state of incandescent volatilisation cannot be the first state. Thus, by this logic, before each first state there must have been another first state.

Beneath the lowest deep another depth,
Still threatening to devour me, opens wide.

This, then, is the eternity of "Naturalismus,"—it is Atheism.

This wholesome limitation of analogical inference has been sometimes met with disdainful resistance. It has been said that it would subvert the very basis of natural science. It is exclaimed, "If we may not securely reason, 'like causes, like effects,' the very lever of scientific discovery is taken from us." The answer is very simple, that there is no intention to rob science of her prime *organon*, "Like causes, like effects." The main drift of this treatise has been to defend and explain it. Only we do not desire to see the votaries of inductive science disgracing themselves by the very shallow blunder (a blunder which the earliest class-book of Logic points out) of mistaking an all important proposition for its erroneous converse, "Like effects, the same cause." This is really the extent of our caution. The inductive logic is in no danger of being cramped or restricted by theology, within the proper domain of natural science. That domain is the known present and the known past of human history, where testimony and experience give us sufficient assurance of the absence of the supernatural. In this field, natural induction is useful and legitimate; it has been the honoured instrument of splendid and beneficent achievements. Let physicists continue to employ it there, to the full, for the further benefit of mankind and the illustration of the Creator's wisdom and glory. But in the unknown eternity of the past prior to human history, it has no place. It is like the mariner's compass carried into the stellar spaces. We know that the poles of this globe have a certain attraction for it, and, therefore, on this globe it is a precious guide. But away in the regions of Arcturus or the Pleiades, where we are not certain whether the spheres have poles, or whether they are magnetic, we are not authorised to follow it.

One more application will be made, and this to a supposed social and moral induction ; in order to exhibit the fitness of the logical canons for ethical as well as physical science. The case is that of the colligation of instances, so often presented by the enthusiastic fanatics in the cause of secular education, as a proof of their proposition that this species of education promotes virtue and suppresses crime. The supposed evidence is, that the statistics of prisons, penitentiaries, and criminal convictions usually show a ratio of illiterate to educated criminals considerably larger than the ratio of illiterate to lettered citizens in the commonwealth. The governor of an American commonwealth, for instance, reported that of all the convicts in his state-penitentiary for ten years, only a little more than ten per cent. could read and write. And he presented this as a conclusive demonstration that illiteracy was the cause, and a knowledge of letters would be the sufficient cure, of crime.

Now, a very simple application of the logical criticism discloses the inconclusiveness of this popular argument. The effect to be accounted for is, breaches of statute laws. The observed antecedent to this effect is, in a large majority of cases in this State, ignorance of letters. Obviously, this is but an induction *per enumerationem simplicem*, which gives no proof whether the sequence give a *post hoc* or a *propter hoc*. The argument offers neither canon of induction to complete the separation. We have in this enumeration nothing whatever to teach us whether the true efficient of the crimes does not lie, hitherto unnoted, between the supposed antecedent, illiteracy, and the effect. The pretended argument gives us no ground whatever for excluding this other obvious hypothesis, that something else may have been the true cause of the crimes, of which cause the illiteracy itself may be also another co-ordinate effect.

As soon as another equally authentic enumeration is compared with the previous one, the justice of this suspicion is fully confirmed. Farther study of the statistics of crime shows, that while American prisons contain a larger percentage of illiterate criminals than American society contains of illiterate free citizens, yet the *ratio of criminals to the whole number of citizens* in any given community is uniformly *far larger where all, or nearly all, adults can read and write, and far smaller where fewer of the adults can read and write*. For instance, in Boston, the boastful metropolis of free schools, with scarcely an adult who could not read and write, the census of 1850 showed that the white persons in jails, penitentiaries, and alms-houses bore to the whole white popula-

tion the ratio of one in every thirty-four. But in Richmond, the capital of a State endlessly reviled for its illiteracy, the same classes of whites bore to the whole number of white citizens the ratio of one to every one hundred and twelve! The difference in favour of the less lettered communities, as revealed by subsequent censuses, is still more astounding; and this, when extended to the whole South, as compared with the North, and as deduced by Northern students of statistics.

Now, were these enumerations of sequences employed in the same illogical way, they would seem to demonstrate exactly the opposite conclusion, *that the knowledge of letters causes crime, and illiteracy causes virtue*. This is a sufficiently biting demonstration of the worthlessness of the pretended induction. The true solution, to which the comparison of the two enumerations points, is this, that neither letters nor illiteracy causes crime in America, but another combination of moral causes, to which these states of the population are themselves related as effects. In any given prison will be found a majority of prisoners who cannot read and write. This does not prove that the possession of these arts is preventive of crime, as the other statistics show. But as American society happens to be constituted, the rearing of children without a knowledge of letters has happened to be the usual accompaniment of a domestic condition of penury and moral degradation, while families of substance and domestic morality have usually given letters to their children. Thus it is made plain that it is not the illiteracy, but the penury and domestic degradation which are the real causes of crime. The illiteracy turns out not to be the cause at all, but an incident or appendage which the domestic habits of Americans have connected with the real cause, the combination of want and domestic degradation.

But when, by the intrinsic activity of the civil government, the children of destitute and morally degraded families are universally invested with the arts of reading and writing, without that moral and economical elevation of the parents and children, to work which the State and State schools are so nearly impotent, then the result is a fearful increase in the *ratio* of criminals to the whole number of citizens. The explanation is, that it is the want and family degradation which together are the main efficient cause of crime, and which the knowledge of letters, while those continue, rather aggravates than checks.

SIR H. BARKLY, G.C.M.G., K.C.B., F.R.S.—I have been requested to move "That our best thanks be presented to Professor Dabney for the Annual Address now delivered, and to those who have read papers during the session." So far as it has been my privilege to listen to the papers read at this Institute during the session, they have seemed to me to have been generally of a character carrying out to the fullest extent the objects of the Victoria Institute; and I am sure that those who have listened to the paper of Professor Dabney will feel that the simple and eloquent language in which it is couched has gone very far, contrary perhaps to the expectation of most of those who sit here, to render the subject of inductive logic attractive to a general audience. (Applause.)

REV. T. FLAVELL, K.C.L.—I will not detain the meeting many minutes whilst I respond to the request that I should second this resolution. Sir J. H. Lefroy in moving the first resolution stated that he had not observed much unbelief during his residence in the Colonies. I do not know how long he lived there, nor in which of the Colonies he resided; but I come from New Zealand, and there are two towns in that colony—Dunedin and Christchurch—in each of which there is a free-thinking association. The men who belong to these associations are, I regret to say, very determined, not only in holding their peculiar views, but in endeavouring, by every means in their power, to spread them through the length and breadth of the land. Their way of beginning is to start with the clergy; I hope I am not making a wrong induction; but twelve numbers in succession of a paper in favour of unbelief were sent to me, I suppose for the purpose of converting me to the views it expressed. Another way of obtaining converts is to get young children into their Lyceum, and when I left Christchurch the Lyceum there had some seventy children being taught under the supervision of these people. In Dunedin, also, there is an infant class in which the teachers endeavour to inculcate these fearful doctrines into the minds of the very young. The question is, How are we to meet this tide of unbelief? There are three courses open to us. One is to let the tide alone; another is to attack these people in strong and harsh language; and the third, and I think the superior method, is to approach our antagonists in a spirit of kindness and sympathy. Two of the Christchurch clergy adopted the latter course. They issued a syllabus of lectures, in which they proposed to state their views, and invited the freethinkers to come to the church, so that they might hear their opponents freely, fully, and courteously expound their views. During six Sunday nights it was my privilege to stand in the pulpit and address large congregations, many of them being men who were members of the various freethinkers' associations. By means of the press, also, I have been able to get careful reviews and extracts from some of the very valuable papers published by this Institute put into circulation throughout the Colony of New Zealand. (Applause.) I am glad now to have the opportunity of expressing my own great indebtedness to this Institute. We in

New Zealand have a great deal to do. The distances that have to be travelled are very considerable; our occupations are varied and arduous; and it often happens that we have not the time to go deeply into these questions. We are unable to examine, as we should wish to do, the books written by men like Herbert Spencer and John Stuart Mill; but at the same time we know that these books are read and devoured by many in the Colony; and, unless we clergy can get some inkling of the views put forward by the followers of these writers, and can obtain some means of answering them, we are left completely out of the tide and lose our influence over the masses. However, by studying the papers written by such men as Bishop Cotterill, Professor Stokes, and others, and disseminating their views, we have the opportunity of doing some good. (Applause.)*

The resolution was put and carried.

Rev. ROBINSON THORNTON, D.D.—Ladies and Gentlemen,—In addressing you at the present moment, I must omit the name of our noble President, for this reason, that I am about to ask you to do what I am quite sure you have already determined to do, namely, to thank him most heartily for his kindness in coming among us and taking the chair this evening. (Applause.) His kindness to this Institute, and the support he has given it, is sufficiently a matter of history; and we are enabled to draw from it a valid induction. We have heard a good deal to-night about “valid induction,” and I must say that the *enumeratio simplex* of what Lord Shaftesbury has done warrants our drawing an unanswerable conclusion with regard to his constant and untiring goodness and benevolence in any useful work. (Applause.) Therefore, by virtue of this induction, which I am sure even Professor Dabney would agree is an adequate one, I ask this meeting to give its cordial thanks to Lord Shaftesbury, together with its congratulations on seeing him occupying his chair as President of this Institute. (Applause.)

Dr. GWYN JEFFRYS, F.R.S.—I must ask the permission of the meeting to say a few words on this occasion, because, unfortunately, I am not a member of the Victoria Institute. I cordially second the vote of thanks to its noble President, who is so celebrated for his exertions in the cause of philanthropy throughout the world, and who has certainly earned our praises for his urbanity and courtesy in the chair. (Applause.)

The resolution having been carried by acclamation,

The Earl of SHAFTESBURY, K.G.—You have been good enough to present to me a vote of thanks for the small services I have rendered to this Institute. It has been my duty on every similar occasion to repeat my sense

* The report of the Institute's Local Secretary in New South Wales is much to the same effect. There, the evils of a Government Educational system which does not even permit the name of God in the lesson-books are intensified by the extent to which the false idea alluded to in the Preface of Volume XVII.—“that men of science no longer regard the Bible or the religious belief it inculcates”—is credited by those now charged with educating the masses in the Government Schools.”—Ed.

of my own unworthiness for the post I hold, and to say that nothing would have induced me to occupy the position could I have foreseen what my acceptance of the high office you have conferred upon me would have entailed. My only claim to that honour is, that I happen to be one of the first promoters of the Society ; for it was I and two or three others, who met together in a back room, many years ago, and then effected the inauguration of it. Since then it has gone on from good to better, and from better to best, until it has reached the position it has now attained. (Hear, hear.) We have all heard the Address that has been read to-night. No doubt, there are many here who comprehended it better than I did. While it was being read my mind was working in this way—and I am afraid some of yours, also, may have worked in a similar manner,—I framed in my own mind a syllogism. The syllogism ran thus : The President ought to know a great deal ; actually, the President knows little or nothing ; therefore, the man who holds that position ought not to be President. (Laughter.) I may however, say that the admirable Address to which we have listened was full of learning and point, and, what I did comprehend, I very much relished. I have, at any rate, learned this from the Address,—that in reading and writing there is an absolute necessity for clear and decided conception, and a clear and decided mode of utterance and expression, in order that what is passing in your mind may be rendered for the benefit of all. You cannot impress others unless you conceive clearly and express logically and neatly. I will here relate an incident that will, I think, aptly illustrate this. The late Sir Robert Peel told me, on one occasion, a remarkable story. There was, he said, a small party at his own house at Drayton, comprising himself, that eminent engineer, the elder Stephenson, Sir William Follett, the great lawyer, and Dr. Buckland, the well-known geologist. Dr. Buckland was a very voluble man,—a man of great native eloquence. His talk flowed like a torrent. After dinner the conversation turned upon coal-mines, and a variety of matters relating to engineering. Dr. Buckland poured forth all his stores of information on these things, while Stephenson, who was full of practical knowledge, and whose mind was replete with every detail connected with this department of science, tried to get in a few sentences ; but whenever he uttered half a dozen words, Dr. Buckland overpowered him, and poor Stephenson had to sit dumbfounded. Follett, shortly after this, said to Peel :—“Stephenson, clearly, knows everything, and Dr. Buckland very little about the practical part of the subject. I should like to set this right.” He very soon did so. Follett was one of the most dexterous and able lawyers at the bar, a man of remarkable eloquence, with great power and quickness of intellect, and one of the most logical orators the world ever heard. He spoke to Stephenson on the subject of the recent conversation and got crammed brimful of information. After dinner, the next day, they very adroitly renewed the discussion. Buckland began ; Stephenson said nothing. Follett took up the cudgels and fought the whole battle out, so completely turning over the Professor that he had not a word more to say. He was, in fact, as completely dumbfounded as Stephenson had been the day before. After this,

Stephenson took Peel aside and said of Follett, "Never in my life could I have conceived the full power of a clear conception and a perfect utterance if I had not witnessed what I have seen to-day." (Hear, hear.) From this anecdote, therefore, we learn how valuable these qualities are. All I have to say in respect to my own experience in these matters with a view to the great benefit you wish to confer on society, is, that if you desire the permanent, the safe, and the substantial welfare of the working classes in the great progress they are now making towards power, compared with what was their former position, you cannot do better than diffuse among them such literature respecting science and sound knowledge as that which is produced by the writers of papers for the Victoria Institute. (Hear, hear.) If you can only bring the people to read those writings you will do much. I can hardly imagine how any one can say, as has been said by one speaker, that there is little or no unbelief. It seems to me that unbelief is dominant. There are a vast number of people who, wishing to believe something, do not believe anything at all; nevertheless, these persons, full of intellect, eager to inquire and yet crammed with unbelief, are ready to receive the deep impressions that are made by literature such as that issued by this Institute; and, if you really do look to their welfare and to the honour of the country you so dearly love, you cannot do anything likely to prove more beneficial than the dissemination of the publications of this Institute, replete as they are with powerful reasoning and sound principle, and showing as they do the indissoluble connexion between Religion and Science—Science and Religion. (Applause.)

The members, associates, and their friends then adjourned to the museum, where refreshments were served.

ORDINARY MEETING, MAY 19, 1884.

H. CADMAN JONES, ESQ., M.A., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

MEMBER :—J. Ruscoe, Esq., F.G.S., &c., England.

ASSOCIATES :—The Ven. Archdeacon Carey, M.A. Camb., Chelmsford ; Rev. Professor J. M. Davis, United States ; J. Elmer, Esq., England ; W. F. Fremersdorf, F.G.S., Wales ; E. W. Harcourt, Esq., M.P., England ; A. Main, Esq., Canada ; J. Rogers, Esq., London ; Rev. W. J. Smith, B.A. Oxon., England ; Captain R. C. Temple, R.E., F.R.A.S., F.R.G.S., India.

HON. LOCAL SECRETARY—Rev. W. David, M.A. Oxon., Cardiff.

Also the presentation of the following works for the Library :—

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|---|-------------------------|
| "Proceedings of the Royal Society" | <i>From the Same.</i> |
| "Proceedings of the Royal United Service Institution" | " |
| "Proceedings of the American Philosophical Society" | " |
| "Legal Ethics, or the Unity of Law." By Professor J. W. Platt,
D.D., LL.D. | <i>From the Author.</i> |
| "Virgil," 3 vols. By Major Burt, F.R.S. | " |
| "The Unreasonableness of Atheism." By J. Hassell, Esq. | " |

The following paper was then read by the Author :—

**EVOLUTION BY NATURAL SELECTION, TESTED BY
ITS OWN CANON, AND SHOWN TO BE UN-
TENABLE. By JOSEPH HASSELL, A.K.C., London.**

"If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous successive slight modifications, my theory would absolutely break down."—*Origin of Species*, p. 146, sixth edition.

I.—INTRODUCTION.

MAN is everywhere surrounded by Life, Organisation, Intelligence, and Will. Such being the case, it is but reasonable that he should desire to know the origin of these phenomena. Hence the inquiry, Has life existed from all Eternity, or had it its origin in time? Were the complicated organisms of the animal and vegetable kingdoms evolved from less complicated forms, or were they brought forth in their completeness from an egg or germ in which was *involved*

all that should afterwards be *evolved*, and this, too, by the direct fiat of an almighty Being? In other words, were all the wonderful examples of adaptation of means to ends, which are now found in both the animal and vegetable world, brought into existence by a Great First Cause—God,—or are they due to second causes—to Natural Selection?

2. In endeavouring to solve the mystery of Life, not a few students of nature, and a larger number of those who merely follow where others lead, have arrived at the conclusion that Life was produced in the remote past by purely physical causes, which causes had their origin in matter itself. In other words, certain elementary bodies entered into combination, and the product of that union was Life. With this primitive creature, or *Evolute*—the monad—commenced an unconscious struggle for improvement—a seeking after something which did not exist—the result of the struggle being complex organisms, intellectual faculties, moral sentiments, will, and conscience.

Many of those who hold these views, dogmatically assert that Evolution is to be regarded as proved to a demonstration; yet they know that not a single instance can be cited of the transmutation of one order of animals into another; they know that, as far as human experience goes, no sponge ever produced a jelly-fish; no insect ever gave birth to a mollusk, nor a mollusk a fish. Again, they know that no bird ever produced a mammal, nor one order of mammals ever produced another order. In the face of the evident persistency of species in the present, these people maintain that in the past there was constant transmutation.

3. Another class of persons are those who, while willing to admit that man's physical nature may have been derived from some unknown anthropoid, his *ψυχή* and *πνεῦμα* were bestowed upon him by a superior Being. Such persons endeavour to pursue the *via media*, and in doing so often use expressions which are somewhat contradictory. Thus, one eminent naturalist, when describing a particular family of flowers, says, "the labellum is developed into a long nectary *in order* to attract lepidoptera, and we shall presently give reasons for suspecting that the nectar is *purposely* so lodged that it can be sucked only slowly *in order* to give time for the curious chemical quality of this viscid matter setting hard and dry.*

Now, may it not be asked, By whose order were these contrivances arranged? Was it by the order of the flower, or of the insect? If by either plant or animal, then it must be

* Darwin on *Orchids*.

credited with Intelligence; and that, too, of the very highest kind. For surely *contrivance* points to a *contriver*, and the ordering of means to ends is the evidence of wisdom and power. But are wisdom and power attributes of cellular tissue or albuminoid secretions? Certainly not. If, then, the potentiality which effected the results did not reside in the orchid nor in the moth, must we not look for it outside matter—in the region of the unseen—in the great I AM?

4. There is a third class of thinkers; namely, those who, having examined the hypothesis of Evolution, have found it wanting, and so reject it. It is true that this class of persons are in the minority, and are often spoken of as a narrow-minded, old-fashioned, and unscientific set. Under these circumstances it becomes the duty of these so-called unscientific persons to state clearly and fearlessly why they are not prepared to give up their faith in a Divine Creator for the new dogma of Evolution by natural selection, as taught by the Haeckels, the Spencers, and the Huxleys of the present day.

II.—REASONS FOR HOLDING THE DOCTRINE OF SPECIAL CREATION.

1. Because the hypothesis of Evolution is not supported by any reliable evidence, and hence it is unscientific. If Evolution be true, then back-boned animals had progenitors which were destitute of a vertebral column; fish were transformed into reptiles; and these in their turn became birds on the one hand, and mammals on the other; and the human species originated in the struggle of a race of apes to better their condition, although that condition was exactly suited to their mode of life.

But though not a single proof is to be found of this wonderful change from the lower to the higher, it is still asserted to have taken place; the unknown is made to do duty for the known, and upon the uncertainties of the unknown are built up the so-called certainties of the known. This is both unscientific and illogical. Unscientific, because it is regarding *improbabilities* as if they were *certainties*; and illogical, because it is drawing conclusions from false premises. It is premised that changes took place of which there is no proof, and then conclusions are drawn which could only be legitimately drawn from undisputed facts. From the known non-transmutation of species is deduced a past transmutation, and this, we hold, is illogical.

2. In the second place, Evolution by natural selection is rejected, because it attributes to mere matter the properties

of mind. There is now before us a beautiful flower—the purple Iris. Its three lower petaloid sepals are delicately striped with a lighter tint, which are there, according to the Evolutionist, to direct the bee or butterfly to where it will find the store of nectar for which it is in search. Above these painted sepals are three delicate stamens, with their long, pocket-like anthers laden with their precious pollen. These important organs are so arranged that when the insect enters the flower to reach the nectary, it must of necessity rub its back against the anthers, and so brush off on to itself some of the pollen, and then on its exit the precious material is carried to the stigma of the pistil, which is open to receive the necessary fertilizing agent.

Here, then, is a beautiful instance of a mechanical arrangement to effect the particular purpose of fertilization. Whence this plan? Did the plant invent it? If it did, then it must have been gifted with intelligence. If it acquired this particular organization, as we are told it did, it must have had power to mould its parts accordingly: it must have exercised a quality which is found only in connexion with mind. That this self-acquiring power is attributed to plants by the Evolutionist is proved by referring to their writings. One example must suffice. Mr. Grant Allen, in his article “Chestnuts Fall,” in *Knowledge* for Oct. 26, 1883, says:—“The key to this strange resemblance between the chestnut and the horse-chestnut is to be found in the fact that they are both *nuts*; they have survived in the struggle for existence by adopting for their seed-vessels the exactly opposite tactics from those adopted by the true fruits.” “Nuts have concentrated all their efforts upon repelling rather than upon attracting the attention of animals.” “The filbert has not only encased itself without in a green husk covered by sharp and annoying little hairs, but has also acquired a very solid and difficult shell.” Now, no instance is found, in the present, of inanimate matter arranging for itself means to ends. What authority, then, is there for saying such phenomena did occur in the past? Scientific dogmatism may demand that its dictum in this particular must be accepted, but those who believe in a Creator protest against the intolerance.

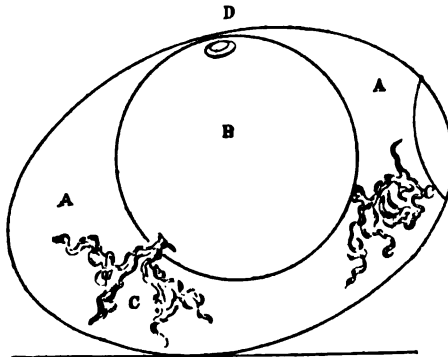
Again. Whence, we ask, the wonderful order and system which characterises the whole vegetable world? Why is it that dicotyledonous seeds produce exogenous stems, while the monocotyledonous produce endogenous? Why have the leaves of the former reticulated veins, while those of the latter have parallel? And why are the floral leaves of exogens found to be either four or five, or some power of those numbers, while those of the endogens are three, or some power of three?

These persistent characters were either assumed by the plants themselves, or they were arranged by Intelligence.

When such evidences of systematic arrangements are found in the region of human activities they are naturally associated with mind, and any attempt to attribute them to any other source is regarded as folly. Why, then, should the systematic arrangements found in the vegetable kingdom, and the adaptation of means to ends in the animal world, be placed to the credit of natural selection, and not to the deliberate act of a presiding mind?

3. In the third place, Evolution by natural selection is rejected, because it cannot account for the teleological adaptation of various organs which are possessed by animals.

And here it will be well to apply the canon laid down by Mr. Darwin. "Natural selection," he says, "acts only by taking advantage of slight successive variations; she never can take a sudden leap; but must advance by short and sure though slow steps. . . . If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous successive slight modifications, my theory would absolutely break down." (*Origin of Species*, p. 146, sixth edition.) Well, be it so! The knowledge of the structure of a bird's egg will enable us to demolish the whole fabric of Evolution by natural selection.

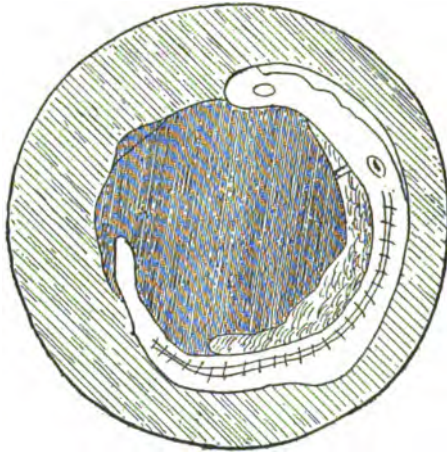


STRUCTURE OF A HEN'S EGG.

A A, White or glair. B, Yolk. C C, Balancers or Treddles. D, Embryo.

The parts of a hen's egg are the shell, the white or glair; the yolk with its treadles, or balancers, and the embryo. Whence these treadles? On the hypothesis of Evolution the ancestors of birds were reptiles or fishes, and, as there are no balancers in the eggs of either fish or reptiles, it is clear

that they do not owe their present form to any slight modification of any previously existing organ ; there could not be a modification of that which did not exist, and so these important parts must have been produced in their entirety,—that is, created. If by the reptile, that creature must have been both omniscient and omnipotent. It must have known all the future condition of its progeny. And what were these ? A warm-blooded creature to be incubated by another warm-blooded creature, at that time not in existence. It must have foreseen the necessity for the embryo to be kept on the upper side of the yolk in order to receive the proper degree of warmth. It must have had some knowledge of the specific gravities of the



THE EGG OF A SALMON (on the eighteenth day of its development).
The egg when laid is spherical, about the size of a small pea, and nearly transparent.

yolk and glair, and determined the exact spots in the yolk to which the new part should be affixed so as to secure the end in view. All these points must have been apprehended and provided for by the reptilian creature, and the structure must have come forth in its completeness, whenever it did appear, there being nothing upon which natural selection could act.

Here, then, is clearly an instance of creation. How can it be accounted for ? Either it created itself, which is impossible ; or the reptile designed the structure, and placed the germ of it in some particular egg,—which is equivalent to saying that the creature was all-wise and all-powerful. Or it was planned by an Intelligent Being who possessed the wisdom to design, and the power to execute ; which is, to say the least, reasonable.

4. In the next place, let the canon, as laid down by Mr. Darwin, be applied to the production of Class Mammalia.

If the hypothesis of Evolution be true, then mammals were evolved from birds or reptiles. If so, then some primitive oviparous creature placed in its egg the germ of the following additions to, and alterations of structure:—

First, as to the Main Characteristic of the Sub-Kingdom,—the possession of the mammary glands. Now, as nothing like these exist in the three classes of the oviparous vertebrata,—Pices, Reptilia, Aves,—“natural selection” was, on Mr. Darwin’s own showing, impotent to produce them, as there was nothing upon which “natural selection” could act. That an animal without milk, and without care for its offspring, should of its own accord acquire milk and be attached to its young, is “unthinkable.” Whence, then, this special organ? Either it created itself, or the bird involved it in its egg, or it was designed by *Intelligence*. We hold the last to be the true solution.

Second, as to the Changes in Structure.—How came the two condyles of mammals to take the place of the single one in birds and reptiles? Why should the “Os quadratum” be obliterated? Why should the thorax and abdomen be separated by the diaphragm? To these questions “natural selection” can supply no answer.

Again—and this is, perhaps, the most remarkable point,—why should the aorta turn over the left bronchus, and not over the right, as it does in birds? Why should the red corpuscles become non-nucleated and change their form,—the oval to circular bi-concave discs? As far as is known, the office of the blood corpuscles in birds is the same as in mammals; there could, therefore, be no necessity for any change of form. Yet the doctrine of natural selection requires that all changes in the form and character of any organ must result in the advantage of the individual. Now, as there could not be any advantage by the change of form, if it was effected by natural selection, it was a purposeless change.

While on the subject of the blood character of mammals, it will be well to give a few facts concerning the circulatory fluid of the various classes of vertebrate animals, which tend to prove that one class was not transmuted into another.

1. The blood of reptiles has corpuscles remarkable for their relative size, and “the size,” says Professor Owen, “increases in the ratio of the persistence of the branchial organs.” Those of the siren can be discerned by the naked eye, and are considerably larger than those in the human blood.

2. The red corpuscles of the amphibia are the largest

known. Those of the frog's blood being taken as a standard of comparison, and observed under the microscope side by side, those of birds are about one-half the size of those of a frog; those of the salamander not quite one-third larger than those of the frog, and rather more elongated; those of the lizard about two-thirds the size; while those of the human blood measure only one-fourth the long diameter of the frog's, and only one-twelfth the long diameter of those of the siren. The red corpuscles of the musk-deer are exceedingly small, being only about one-twentieth the size of those of the frog.

3. We have the highest medical authority for saying that, if the blood introduced into the veins of a living animal differs merely in size of its corpuscles, a disturbance, more or less remarkable, takes place; the pulse is increased in frequency, the temperature falls rapidly, and death generally happens after the lapse of a few days. The effects produced by the injection of blood having circular globules into the veins of an animal, the corpuscles of whose blood are elliptical, or *vice versa*, are still more remarkable: death then usually takes place amidst nervous symptoms of extreme violence, and comparable, in their rapidity, to those that follow the introduction of the most energetic poison.*

Here then, again, judged by its own canon, the whole fabric of Evolution by natural selection falls to the ground.

4. Another subject worthy of consideration is the adaptation of the general structure of fish to the element in which they live. The resistance which water offers to the passage of a body passing through it is very great. When compared with air it is as 80 to 1, and yet a fish can pass through it with the greatest ease, and this for several reasons. First on account of the form and disposition of the vertebral column. The backbone of a fish consists of a number of small vertebræ, having at both ends a cup filled with a gelatinous substance, that which is within each pair of cups, thus forming a ball. Thus there is a flexible axis with all the appendages somewhat flattened.

Second. The entire body tapers at both ends, so as to present to the water no actual line of resistance.

Third. Most fish possess a particular organ called the swim bladder. This organ, which is long and cylindrical, and placed along the under side of the central axis, is filled with a gas which is many times lighter than water, and thus the creature is rendered specifically lighter than it otherwise would be.

* Milne Edwards.

Whence the particular form of the vertebræ? If Evolution be true, then the ancestors of fish were *invertebrates*. Why then a vertebral column at all? And, if one, why this particular form, which beyond doubt is the one most adapted to the wants of the animal?

5. Such a vertebral column as this, while it provides for great flexibility in one place, does not provide for movement in any other, and so would not be adapted to the wants of such a reptile as a serpent. A glance at the structure of the vertebral column of the Ophidians reveals a manifest adaptation of means to ends. Each vertebra is furnished with a ball at the one end and a cup at the other end: the ball of one vertebra fits into the cup of the other, thus forming a column which is flexible in more than one plane. This great flexibility, however, is gained at the expense of stability, and so a compensation is provided. Each vertebra is furnished with a number of lateral appendages, which, fitting into each other somewhat after the fashion of a tenon and mortise-joint in carpentry, effectually control the lateral movement of the column, thus securing both strength and flexibility. On the hypothesis of Evolution by natural selection, these alterations and additions to the spinal column were acquired by minute modifications of existing processes. But the examination of the vertebral column of the two classes will show the observer that such a view is most untenable. It is difficult to conceive of any slight modification of a biconcave vertebra which would end in one end becoming convex, when the former was the most adapted to the mode of life of the creature; or of the gradual loosening of the spinal processes of a fish so as to produce the movable ribs of a serpent.

But why should any fish ever have made an effort to change its condition when its organisation and constitution were finely adjusted to the elements in which it was placed. With a boundless ocean through which to roam at will, and with an abundant supply of food, it was in harmony with its environment; and so no advantage could accrue to the individual by a change. Not only so, but the very effort to effect a change would have been the first of a series of desperate struggles. The effort to breathe air not dissolved in water would result in inflamed branchia. And if, as we are told it did, the swim-bladder thus received its first impetus toward acquiring the structure of a lung, the individual who made the attempt would return to its native element with both gills and swim bladder less adapted than before to perform their proper functions. The creature would thus be less in harmony with its environment,

and so placed at some disadvantage. It is impossible that any such effort on the part of a fish could result in the good of the race.

Here then, again, we see that tested by its own canon "natural selection" is found wanting.

6. A few examples may next be given of the evidence of design in the lower forms of animal life.

First.—The Contrivances for Oxygenating the circulatory Fluids, and for obtaining Food in the Lower Forms of Animals.

(a.) *The common Sponge.*—This lowly creature, like all animals, must be nourished by food. It is, however, except as a germ, fixed during the whole of its life, and so is unable to go in search of its prey. What, then, must be done? The food must be brought to it. How is this accomplished? Thus. Its internal structure consists of a number of canals and cavities. The cavities are furnished with numerous delicate cilia, and these ciliated cavities are in connexion with an in-current and an ex-current system of canals. The former are connected with numerous pores, which are periodically opened and closed in the dermal membrane; the latter are in direct connexion with the oscula. When, therefore, the pores are opened and the cilia which line the cavities are moved rapidly, the water in them is set in motion, and passes out by the oscula; more water, of course, passing in to take the place of that which flows out, and thus a constant current is produced. The water, as it passes through the structure, brings with it both the oxygen and the food which are necessary for the support of the creature.

Now if the Spongida were evolved out of the Amœba which has neither ciliated cavities nor canals, these appendages must have been produced in their entirety whenever they did appear, there being nothing upon which natural selection could work. And then it must not be forgotten that the Amœba was entirely in harmony with its environment, and therefore there was no call—if one may so speak—for any alteration in structure.

(b.) *The Means of Defence in the Outtle-fishes.*

These creatures have many enemies. The sharks and other inhabitants of the ocean regard them as a favourite morsel. Few, however, are thus destroyed. Why? Because the weaker creature is provided with a special organ of defence. It has a muscular bag, in which is secreted an inky fluid, which can be ejected at will. There is a communication between this ink-bag and the siphon through which the water passes, after having bathed the branchia. When, therefore, an enemy appears the contents of the ink-bag is passed into the siphon

and mingles with the water in its passage outward, rendering that in the immediate vicinity of the cuttle cloudy, and so entirely hides the creature from the gaze of its enemy. The force with which the coloured liquid is ejected causes the animal to pass rapidly backward, and so effectually to elude its foe.

Whence this arrangement of means to ends for the welfare of the individual? If by natural selection, from what other structure was it derived? The Gasteropoda have nothing of the kind, nor have the Lamellabbranchiata; the only creatures which have any similar structure are certain of the Pteropoda. If the Cephalopoda derived the organ from the Pteropoda, whence did the latter derive it?

According to the canon laid down by Mr. Darwin by which to judge his hypothesis, here is another case that is fatal to the doctrine of Evolution by natural selection. Here is a complex organ which exists in a certain class of molluscs, and which does not exist in any creatures below that class. It is clear, then, that it does not owe its present perfect form to any slight modifications—improvements—of any existing organ less perfect, less useful. We contend, then, that we have a perfect right to say that the structure owes its existence to the will of an Intelligence. It must not be forgotten either, that the organ here spoken of has existed from the very earliest ages, for the fossil representatives of the present cuttle—the Belemnites of the Transition period—possessed the structure in its greatest perfection. It is an interesting fact that Dr. Buckland prepared the pigment sepia from the contents of the fossil Belemnites. Here, then, are two important facts: first, the structure is unique; and, second, it was possessed as perfect by the cuttles of the geological age as by the cuttles of the present day.

Enough has been said to show that, judged by its own canon, the hypothesis of Evolution by "Natural Selection" is untenable, and cannot account for those wonderful adaptations of structure to the habits of animals which are found in each of the sub-kingdoms, each example of which is a witness for the doctrine of special creation by an all-wise and all-powerful God.

6. Let us now step outside the world of organization, and glance at some of the laws which regulate the Forces of Nature.

First, the Force of Heat.—One of the properties of this force is the expansion of all bodies. There is, however, one exception to this rule—an exception which results in good to the world in general, and so bears the stamp of wisdom and benevolence.

Water, like other bodies, expands by heat and contracts by cold. But at one particular point there is an exception to this rule. At the temperature of 40 deg. Fahr., water is at its greatest density, and as each degree of heat is lost it *expands*, and so rises. It is thus that the temperature of 32 deg.—the point at which water becomes solid—is always the top layer—and ice is formed at the surface. If it were otherwise, many of the rivers and lakes of the world would ages ago have become solid masses of ice, and a large portion of the world a region of desolation and death. But, thanks to this exception to a general law, it is not so.

Whence this exception? Did the particles of the fluid impress it upon themselves? If so, they must be credited with doing that which bears the mark of Intelligence.

Take another example—the arrangement for maintaining the proper proportion of the constituents of the atmosphere. The atmosphere is composed of gases mechanically mixed. Nitrogen 77 parts, oxygen 23,* and a varying amount of watery vapour. The world of organization is made up of vegetables and animals. The plants are makers: and if they had a voice their constant cry would be, "Give us carbon." Animals are consumers, and if they had a voice their cry would be, "Give us oxygen." Now, how are the wants of each class supplied? Thus:—

The main substance of plants is carbon. In order that the tissues may be built up carbon must be supplied; and as plants obtain their nourishment by absorption, the carbon must be supplied in a gaseous form.

The chief product of respiration of animals is carbon di-oxide. Carbon, taken as solid food is the chief supply, and this, after the processes of digestion and absorption, as blood comes into contact with air in the lungs, unites with the oxygen, and forms carbon di-oxide, which is exhaled.

Plants imbibe the air charged with carbon di-oxide, decompose it, and turn it into carbon and oxygen, keep the carbon, and return the oxygen to the air, to be again used by animals. There is thus a constant interchange, and the balance is maintained. Whence this arrangement? Did the plants and animals arrange it for themselves? If so, they must be credited with wisdom, power, and benevolence.

According to the hypothesis of Evolution, the only animals that existed at first were certain low forms of the Protozoa,

* Percentage of Oxygen, by weight, 23. Nitrogen, by weight, 77.
Ditto, by volume, 21. Do., by volume, 79.

Watts's *Chemistry*, vol. i., p. 431.

creatures destitute of nerve-centres, having no sentient life; it is clear, then, that these creatures could not have thought out the plan. But, perhaps, say some, the primitive molecules ordered the arrangement when they were issuing from the nebulous state? To this, however, the intuitive judgment of man demurs. What then? If the arrangement is not placed to the credit of the primitive organisms, nor to the molecules of the unorganised, it must have been provided for by mind—the great mind—the Great First Cause—God.

But enough of this. May we not apply the words of the great Apostle of the Gentiles, and say, "We speak as to wise men, judge ye what I say"?

III.—THE NEW FAITH.

If the doctrine of special creation be given up, and the Darwin-Spencerian creed of Evolution by natural selection accepted in its place, then we must subscribe to the following articles of scientific faith:—

1. A lifeless, plantless ocean evolved out of itself aquatic plants; and then a marine vegetation, passing from its proper domain, became terrestrial; sea-weeds thus transformed themselves into mosses, and mosses into ferns; and so like produced unlike.

2. A cryptogamic vegetation, planned for itself floral organs, and altered its structure to suit such change.

3. Acrogenic stems became endogenic, and some of these changed themselves into exogenic, and thus throughout the long vista of geological ages plants produced others *not* after their own kind, which thing, though contrary to experience, nevertheless did occur.

4. At some unknown period in the past the whole course of the vegetable world reversed itself, and from that time to this every plant has produced another after its own kind. Why persistency of species is now found to be the order of nature, while in the past transmutation pertained, cannot be determined; yet since the doctrine of Evolution requires that both be believed, it is to be accepted without questioning.

5. The first animals were evolved either out of non-living matter, or else from vegetable protoplasm. The primitive animals thus produced were destitute of any specialised contrivances for the performances of the functions of animal life, —respiration, circulation, assimilation; each was extemporised by the lump of jelly as occasion required.

6. As all animals were at first aquatic, but are now both aquatic and terrestrial, the latter were evolved out of the former; although there is no reason why such a thing should

take place. But as the existence of land animals cannot be accounted for in any other way, it is to be believed, even though it is unsupported by any evidence.

7. As the invertebrated animals have their main masses of nervous matter ventrally disposed, and the vertebrated dorsally, by some unaccountable freak of nature the animal world was, once at least, "turned upside down." It is difficult to say why this should have taken place, or how it was accomplished; but inasmuch as the doctrine of Evolution requires that it did take place, that is enough,—therefore it is to be believed that it did occur.

8. Every special organ in animals sprang into existence, as required, by the operation of the mystery of mysteries "natural selection," and so it came to pass that the oil-glands in the water birds were invented by a clever old goose who once suffered with rheumatic fever consequent upon repeated drenchings. After many failures, she hit upon this plan to prevent the mischief in future.

9. Birds were evolved out of reptiles, scales becoming feathers, fins becoming wings and feet; swim-bladders becoming lungs; a heartless creature extemporised a heart; two-chambered hearts became four chambered; and cold blood became hot. How, when, where, and why, need not be known: suffice that it must have been so, because evolution requires it.

10. Class Mammalia being evolved out of reptiles or birds—it matters not which—it came to pass, by some unaccountable act of the mystery of "natural selection," the form of the blood corpuscles were changed from oval to spherical, and the blood capillaries enlarged their capacity to suit the change. How this was accomplished it matters not. The unreasonableness of the whole affair makes it the more credible.

11. In the past, species were not fixed, and so it happened that one race of animals gave birth to another quite unlike itself; and so by the mystery of Evolution, a marsupialian was evolved into a ruminant, a ruminant into a rodent, a rodent into one of the quadrumana, and one of the quadrumana into one of the bimana. The unreasonableness of this is not to be questioned.

12. Human speech and moral consciousness have been evolved as necessity occurred, and although the highest forms of the quadrumana have never shown any tendency, during the human period, to advance towards a state of civilisation, the very fact that they do not should be accepted as a proof that at one time they did. True, such a line of argument is illogical; but, then, if such changes did not take place Evolu-

tion cannot be true. It stands, therefore, that as Evolution must be true such changes did take place, notwithstanding their unreasonableness.

Finally, it is to be believed that out of nonentities came potentialities; by the action of the non-living came life; by the motions of the inorganic were produced the organic; and by the commingling of the atoms of gross matter were produced thought, will, and conscience. Though all this is opposed to human reason and common sense, it matters not; it must be believed.

These articles of the Evolutionists' Creed may be popular—as doubtless they are,—but we are bold enough to say that they are erroneous, and therefore, instead of subscribing to them lest we should incur the wrath of some of the leaders of modern thought, we prefer to re-assert the Old Faith, which holds:—

1. That God did at the first create a certain number of distinctive creatures, which, though capable of variation within well-defined limits, have always produced other creatures essentially after their own kind.

2. That each distinct group of animals was formed on a well-arranged plan or type, so to speak: and thus, though there is a similarity of a general character in the various sub-kingdoms, there is a dissimilarity between the members of one group and the members of another group of the same sub-kingdom, which proclaims them as distinct: built up, it is true, according to a well-devised plan, but not derived from each other.

The CHAIRMAN (Mr. H. Cadman Jones).—Mr. Hassell's paper has been listened to with so much attentive interest, that I need hardly ask the meeting to return its thanks to the author, but take it for granted that those thanks are unanimously accorded. If any present have remarks to make upon it, we shall be glad to hear them.

Mr. W. P. JAMES.—I rise to say how entirely I agree with what Mr. Hassell has said in reference to Mr. Grant Allen. As a botanist, I must say that I think that agreeable writer is really carrying the theory of evolution to a simple *reductio ad absurdum*. He appears to me to convert the whole thing into a romance. In his hands plants can do all but speak. Unfortunately for the interests of true science, there are others who pursue the same method. I might refer to the lady whom Mr. Hassell has mentioned,—although it is with regret that one criticises the works of one belonging to the fair sex; but I am sure her books are open to the same objection, from the zoological point of view. She takes it for granted that the doctrine of evolution is true, and, although a very painstaking writer,

she not only assumes this, but derives all sorts of consequences from it. These two writers (and I may add Mr. Clodd) are, unfortunately, only types of a large class.

The Right Hon. A. S. AYTON.—I am sure we are much indebted to Mr. Hassell for the practical illustrations he has given us of what may be described as the romantic nature of the doctrines advanced by those who profess and teach the theory of evolution. There is, at all times, something very fascinating in romance, however strange and startling it may be. Many, at the present day, seem to be more fond of reading romances than the record of occurrences belonging to the regions of fact and truth. This was, in all probability, the idea entertained by the great philosopher of old, who said that all young people should be educated exclusively in what was true, and that only when they had acquired a perfect and solid basis of truth should they allow their minds to wander into the arena of fiction. This was because it was only then that they would be able to distinguish fiction and romance, poetry and imagination, from what was real and true, as made known by the accumulated facts of worldly experience. This is a form of education which, I am afraid, is being reversed at the present day, when boys are very early entrusted with books of romance as part of their reading; and I think it is found that they always prefer the romantic to what is real, and true, and solid. (Hear, hear.) I am of opinion that this is the one cause of the popularity obtained by the ideas which have been put forward on the subject of evolution. It is so delightful to read and speak about plants and animals doing this and that and the other. It brings to the mind a new kind of *Æsop's Fables*, in which the plants and animals are always talking and thinking, and arranging all sorts of stories and ideas and actions; but the evolutionist writers, instead of giving their peculiar views the form of fables, dress up the subjects they discourse about in the guise of little deities, in the sense of their being able to create, by the operation of their own wills, the means of satisfying all the wants of their different species, and even of inventing new species, if they find their own do not suffice for their requirements. Let us suppose the case of an individual belonging to a particular species, who is dissatisfied with the conditions of his own existence; for it must be some individual member of a species who is first to enjoy the privilege of recruiting himself by the process of selection, as I do not see how one individual can operate on another. We, at any rate, do not possess this faculty as human beings. We cannot say, "We should like this little boy to have six fingers instead of five," then proceed to confer upon him the additional digit. Indeed, we are unable to attain such a result for ourselves, however much we may desire to bring about such a change. We certainly cannot attain it by thinking we should like to have it. Therefore, we have no power of evolution in ourselves, and much less can we exercise it in that of our neighbours. Let us here consider what we are called upon to believe,—because we are asked to give credence to analogous wonders as actual facts. We are actually called on to believe that an individual, having effected an alteration in the conditions of its own existence, is enabled to impart to its

eggs—and the word “eggs” may be applied to the embryo of all creatures, for they are all eggs, though, it may be, in different forms and conditions,—the property of growing in a different way from that in which the parent animal grew itself. How is the animal to transmit this peculiar power and force? If we only think of this for a moment, we must see that we are invited to believe that which is utterly incredible. The limits of deviation are prescribed for the whole human race, and the entire family of mankind necessarily exists within those limits.

Mr. W. GRIFFITHS.—In the days of Harvey, the discoverer of the circulation of the blood, this very theory of evolution was started by French philosophers, who held that creation was in reality a system of evolution from minute particles. But Harvey took the illustration of the hen's egg, and showed that all the parts of the developed animal must have existed in the egg from which it came, and that the production of the chicken was not a species of evolution, dependent on the conditions of warmth and other external influences outside the shell. Harvey was at that time considered as having put an end to this doctrine, which, after all, was merely an hypothesis, for the foundation of which no facts could be produced. All that was done by those who advanced the evolution theory was to say: “If so and so, then so and so”; but they never proved that “so and so” did, in the first instance, exist. Throughout the whole of their arguments there was nothing to show that organic life of the animal or vegetable world was developed from inorganic matter, nor that the moral life of the human being was developed from the organic life of the animal.

Mr. D. HOWARD, V.P.I.C.—I am sure we have all enjoyed Mr. Hassell's paper, which has so vigorously and clearly put before us the weak points of the evolution hypothesis. I think it quite true, as has been already stated, that the worst enemies of the evolution theory are those who belong to the romantic school. The fact that it is impossible to think out the real Darwinian hypothesis without calling in some such aid as is afforded by Miss Buckley's fairies, and giving an anthropomorphic turn to the discussion by imputing reason to plants and the lower animals, shows the peculiar difficulty in the way of accepting the theory. That variations—the results of blind chance—should gradually improve a species is the original hypothesis, and it is one that is singularly unproved by anything in the shape of reasonable evidence. The throwing in of a few millions of years does not, to my mind, help the matter; it is rather like saying: “Two parallel lines do not include a space, but if you go on continuing the same lines for millions of miles, who can say they will not produce such a result?” This, however, would seem to be the tendency of modern thought; and the primary difficulty I have thus stated in regard to the Darwinian theory is one which even its own advocates and defenders seem unable to get over. They are obliged, therefore, to call in the aid of the anthropomorphic method adopted by the writers to whom allusion has been made. But the more difficult points they have to get over are those to which Mr. Hassell has called attention. How, for example, can a two-celled heart become a four-celled heart? We can understand the action of either, but

it is impossible to conceive the mode by which this development is originated. A two or a three-celled heart can be conceived, but how can a two-celled heart become three-celled? It is true that we may find rudimentary organs which may be taken as the transition point; but those rudimentary organs do not necessarily prove evolution, because a rudimentary organ must be useless in the intermediate stage. This seems to be the weak point of the hypothesis. How far the modifications of a species may go is a fair matter for inquiry. That these are less than is commonly imagined is undoubtedly proved by evidence. Until the laws of heredity are properly understood, and the mysterious laws of reversion are made clear, it is a bold assumption that there is any gradual change in all directions, which is the foundation of the evolution theory; and I would again ask, in regard to what is one of the great difficulties of the whole system, "How, by a small gradual change, can two become four?" Until we have answered this question, we shall not have got over the difficulty. The theory of Haeckel is that chance variations are at the bottom of the whole matter. I hold that the writings of these popular evolutionists are impossible to think out unless they call in some other factor such as I have referred to. When they have to call in the aid of fairies, and so forth, there is pretty good evidence that, for sober thought, we want something a great deal stronger than they have advanced. The result is that we must have a creative mind and a creative idea. (Applause.)

A MEMBER here wished to point out that, when the lecturer had introduced a figure of speech—saying, "The constant cry of the plants was, 'Give us carbon!' and of animals, which are consumers, 'Give us oxygen!'" he implied that, on the part of the plants and animals, there must have been a concentration of effort in a particular direction. Therefore he should not have quarrelled with Mr. Grant Allen doing the same in regard to the horse-chestnut.

MR. HASSELL.—I quote Mr. Grant Allen's own words. He says: "Nuts have concentrated all their efforts upon repelling rather than upon attracting the attention of animals." I only use a figure of speech in speaking of a fact in botany; but in Mr. Grant Allen's case, he does not claim to use a mere figure of speech. He says the "nuts have concentrated their efforts," and thereby he attributes to the nuts a conscious faculty. What I imply is, that the want of the plant is carbon, and that of the animal oxygen, and I do not think I am open to the charge of doing any wrong to Mr. Grant Allen in what I say of him. I may also state that, in opposition to the articles of faith which I do not subscribe to, I have given two articles to which I do subscribe; these I maintain are reasonable, and should be constantly brought before the young, whenever there is an opportunity. It is the duty of every teacher to impress upon his hearers the fact that it is more reasonable to believe that plants and animals were made by an intelligent Being, than that they formed themselves. And it is the duty of every believer in *Creation* to fearlessly assert that belief. I quite agree with what Mr. Howard has said, and thank him for his remark about the heart: I believe that the heart and the blood

are the great crucial points on which we may take our stand. I thank the meeting very much for the kind attention it has given to my paper.

The meeting was then adjourned.

PROFESSOR VIRCHOW ON EVOLUTION.

The following speech was made by Professor Virchow, during the Edinburgh University Tercentenary, 1884 :—

"I should have wished to speak to you in your own language, but as I only received the invitation to this meeting on arriving in London, it was impossible for me to prepare a good address ; therefore I beg to be excused if I make my speech in German. [Professor Virchow then proceeded with his speech in German, of which the following is a translation.] In considering what to say that might be of interest to a group of students, I remembered that I would be speaking not only to Scotland, but to the whole English-speaking world. I knew that great subjects were discussed in your university, in the wide range of which the teachings of this school were largely in accordance with my own. Among the matters which have a common interest for us, I am in such cordial sympathy with you that there is only one topic on which there may seem to have been some disturbance in the happy relations which subsist between us. You will allow me to speak to you on the position which I am supposed to have taken up towards the teachings of Darwin. The opinions which I expressed have, in some English publications, been much misunderstood. I never was hostile to Darwin, never have said that Darwinism was a scientific impossibility. But at that time, when I pronounced my opinion on Darwinism at the Association of German Naturalists at Munich, I was convinced, and still am, that the development which it had taken in Germany was extreme and arbitrary. Allow me to state to you the reasons on which I founded my opinions. Firstly, Darwinism was interpreted in Germany as including the question of the first origin in life, not merely its manner of propagation. Whoever investigates the subject of development, comes upon the question of the creation of life. This was not a new question. It is the old *generatio equivoca*, or *Epigenesis*. Does life arise from a peculiar arrangement of inorganic atoms under certain conditions ? We can imagine oxygen, hydrogen, carbon, and nitrogen coming together to form albumen, and that out of the albumen there was produced a living cell. All this is possible ; but the highest possibility is only a speculation, and cannot be admitted as the basis of a doctrine. In science it is not hypotheses that decide, but facts ; we arrive at truth only by investigation and experiment. I need not say that this demand of science for proof, instead of speculation, was long ago made in England. Ever since the time of Bacon it has had a home amongst you. We may concede that *generatio equivoca* is a logical possibility. But it is important for you students always to bear in mind the great distinctions between the construction of logical possibilities and their application in practical life. If you try to shape your conduct simply according to logical possibilities, you will often find yourself coming into violent conflict with the stern facts of existence. Let me give you an illustration. In recent times, the fact of the presence of minute organisms giving rise to important processes has been recognised, not only in medicine, but in connexion with agriculture, and various industries. It was of the utmost importance to determine whether these organisms were originated *de novo* in the decomposing bodies, or were produced by similar pre-existing organisms, and introduced from without. A century ago it was possible to admit the spontaneous generation of microbia. But here sits M. Pasteur, the man who has demonstrated by means of direct experiment that, in spite of all logical possibility, all known

microbia found in decaying matter are derived from similar ancestors. No man would now be justified in practical life in acting on the possibility of a *generati equivoca* of microbia. A physician who finds himself in presence of infectious disease among his patients, or an agriculturist whose crops are blighted, or a man engaged in the production of alcohol or sugar by fermentation, must set himself to discover what brings about the changes that he has to deal with; he must see that organisms are there which have been imported from without, and must then inquire whence they had been derived. The physician who has to combat an epidemic, dare not act if the germ were spontaneously produced in any patient. Such is the difference between logical possibilities and the practical work of daily life. Every teacher of science must lead his students to suppose that each living being that he meets must have had a father and a mother, or at least one or other of them; and every scientific conclusion maintains that one generation is legitimately descended from another precisely similar. That was one consideration that led me to warn my fellow-countrymen against developing a system out of logical possibilities. At the very time when we were getting free from the chains of former dogma, we seemed to be in danger of forging new ones for ourselves.

"The second question concerning Darwinism had regard to the descent of man, whether from apes or some other vertebrate animal. Was there anywhere a pro-anthropos? In regard to this question, I thought that the existence of such a precursor of man was a logical possibility, perhaps a probability. Only I found, to begin with, that it was a purely speculative question; not one raised by any observed phenomenon. No pro-anthropos had ever been discovered; not even a fragment of him. I had myself long been specially occupied in making pre-historic investigations to get near the primitive man. When I began these studies, twenty years ago, there was a general disposition to arrive at this discovery. Everybody who found a skull in a cave or a bone in the fissure of a rock, thought he had got a bit of him. I wish you specially to notice that the smaller the fragment of skull, the easier it was to make it out to be the skull of the pro-anthropos. It was never thought of where the entire skull was in hand. When the upper part of the cranium alone—the calvarium without the face and the base, as in the case of the Neanderthal skull,—was discovered, it was easy, by changing its horizontal position, by elevating either the anterior or posterior part, to give the impression that it had belonged either to a being of a superior or inferior race. You can make the experiment with any calvarium. If you make a series of diagrams of skulls, placing them over each other, you may make them appear similar or dissimilar, according as you choose one or another fixed point for bringing them into relation. I should like to impress upon you that every discovery of that kind should be received with caution and scrutiny. In my judgment no skull hitherto discovered can be regarded as that of a predecessor of man. In the course of the last fifteen years we have had opportunity to examine skulls of all the various races of mankind,—even of the most savage tribes—and among them all no group has been observed differing in its essential characters from the general human type. So that I must say that an anthropological teacher has not occasion to speak of a pro-anthropos except as a matter of speculation. But speculation in general is unprofitable. As Goethe says,—‘A speculating fellow is like a beast on a barren heath led about by the Evil Spirit.’ The day before I gave the address in Munich to which I have referred, Haeckel had gone so far as to propose to introduce into our schools a new system of religious instruction based upon the doctrine of the ‘Descent of Man’; and I still think it necessary to guard against the danger of constructing systems of doctrine out of possibilities, and making these the basis of general education.”

ORDINARY MEETING, DECEMBER 1, 1884.

H. CADMAN JONES, ESQ., M.A., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following paper was read by Mr. W. N. WEST (hon. treasurer), in the unavoidable absence of the author :—

ON THE RECENCY OF THE CLOSE OF THE GLACIAL PERIOD IN ENGLAND AND WALES, as shown by the limited depth of Post-glacial Stream-channels; the small extent of Denudation of Limestone Rocks; and the fresh aspect of Moraines. By D. MACKINTOSH, Esq., F.G.S.

1. *Brief Statement of the Order of Glacial Events.*—Those British and American geologists who have made the most extensive observations are now very nearly agreed in believing that there was *first* a period of land-ice which filled up the valleys, and covered many of the mountains; *second*, a submergence of the land which commenced *before* the close of the land-ice period, continued during a comparatively mild period, and did not terminate until *after* the commencement of a second period of land-ice.

2. *Condensed Statement of Professor James Geikie's Discoveries and Opinions.*—Striated rock-surfaces are found on certain parts of the sea-coast of Scotland, where they lie lower than the latest *post-glacial* "raised beaches" which, more or less, cover the glaciated rocks. Below the level of the present

raised beaches the sea (when the beaches were deposited) covered and protected the glaciated rocks. The sea was then twenty to thirty feet higher than now. Around the sea-lochs of the western Highlands and Sutherland, and likewise on the east coast, glaciers came down to the sea-level (when it was twenty to thirty feet higher than now) in Neolithic times. The epoch of the latest glaciers in Scotland was separated from the last great glacial period by the oldest submarine forests, and the buried trees at the bottom of peat-bogs. Then the land went partially down, and the latest (now) raised beach was deposited. Glaciers again appeared in the mountain valleys and came down to the sea-level. Neolithic man was then living, since we find his canoes lying at the bottom of the Carse clays, associated with the trees of the submarine forests. To this statement of Professor James Geikie's discoveries, I may add that Mr. Kinahan has found traces of the continuance of local glaciers in Ireland as late as the time when the 300 feet and 100 feet raised beaches were formed.

3. *Limited Depth of Post-glacial Stream-channels.* — In many parts of Wales, Cumberland, and elsewhere, on the sides of valleys (such as Nant Francon), gorges, from a few feet to at least nine or ten feet in depth, have been ploughed out, by what is locally called the "bursting of a thunder-cloud," in less than an hour, while pre-existing channels of streams have, to a great extent, been enlarged. But in many places, where post-glacial channels have been excavated by the *ordinary* action of streams, they have not reached a depth of more than a few feet, and that even in loose drift, or in soft and incoherent rocks. I could mention numerous instances in many parts of North Wales and Cumberland, but a few may suffice, namely, stream-channels around Llyn Ogwen; in Llanberis Pass; on some of the slopes of Snowdon; above the Penrhyn slate quarries; some of the brooks around Llangollen; on the east side of Minera mountain (west of Rhosllanerchrugog), where several rapidly-flowing streams have excavated channels in glacio-marine drift only a few feet in depth; in Cwm Llafar (under Carnedd Dafydd), where a foaming brook has made wonderfully little impression on the bottom of a narrow valley which, according to Ramsay, was scooped out by one of the later glaciers; in many of the Cumberland valleys, &c. The very fact that many of the post-glacial stream-channels of Wales and Cumberland are sufficiently shallow to admit of being crossed by cart and carriage roads, without bridges, is a striking proof of the trifling extent to which post-glacial streams have deepened their

channels. But it is necessary to guard the observer against mistaking pre-glacial excavations for the post-glacial channels of streams, because the upper boulder-clay of England and Wales has been generally deposited as a *wrapper* which, in a thin bed, rises to the summits of the knolls and goes down to the bottoms of the valleys which must have been excavated in glacial or pre-glacial times. According to Mr. De Rance, in a great part of Lancashire, glacial deposits occupy old pre-glacial valleys, producing the phenomenon of valley within valley. Mr. Searles V. Wood tells me that in Holderness, north of Hull, there are many examples of streams making channels in a mere wrapper of glacial drift which follows the undulations of the surface of the ground.

4. *Time Indicated by the Vertical Extent of the Pedestals of Boulders.*—Boulders may be said to be without pedestals when the rock-surfaces on which they rest extend continuously under them with little or no change of level; in which case the boulders, owing to their particular forms or positions, are not capable, to an appreciable extent, of concentrating or intensifying the action of rain water, which, in a *diffused* state, would appear to exert scarcely any denuding influence around the boulders. They may be credited with acquired pedestals where the underlying supports have been caused by the pluvio-torrential action resulting from wind-blown rain, and by the form and extent of the water-collecting surface furnished by the boulders. They may be said to rest on appropriated or usurped pedestals, where the latter depend on the *previous* removal by denudation of the surrounding rock, in which case they are merely "perched blocks," and can therefore furnish no evidence of the vertical extent of circumjacent denudation which has taken place *since* the boulders came into their present positions.

5. *Boulders on Limestone Rocks North of Llangollen.—Distribution and Description.*—About two and a half miles north of Llangollen, a ravine above Brook House leads up to a high limestone plateau on the left called Craig-yr-ogof. On then going north towards a ravine called Nant-hen-Gastell, many boulders of Arenig felsite may be seen on grass-, fern-, or heath-covered surfaces, with a hollow on one or two sides caused by the down-splashing of concentrated rain-water from the boulders. After crossing this ravine, and turning to the left as far as the brink of the innermost well-defined cliff-line, a monstrous-looking boulder of nearly black felsite, about eight by seven by five feet in diameter, may be seen in a perched position close to the brink. It has a rather irregular

fragmentary pedestal (Fig. 1) of limestone from eight to nine inches in average height above the surrounding ground ; but it is possible it may have found this pedestal ready made, so that it can admit of no reliable calculations concerning the time required for the circumjacent denudation of the limestone



Fig. 1.

rock. Farther north a small boulder may be seen resting partly on limestone, with a surface around the boulder which has been lowered only about two inches by rain since the boulder came into its present position. On the neighbouring limestone outcrops other boulders may be seen, around which the action of rain has lowered the general surface to the extent of only a few inches. From a comparison of facts, and after rejecting boulders which may have found ready-made pedestals, I have been led to the conclusion, that if we include hollows (chiefly on the leeward, but likewise on the windward side of boulders, and to a small extent all round the boulders) the average vertical extent of circumjacent denudation since the boulders were left by melting ice has not been *more* than about six inches, and that this extent does not necessarily indicate a period of more than a few thousand years (see sequel). Before leaving this plateau, it may be well to state that many of the boulders show signs of having fallen from a great height (probably from floating ice), for the boulders have not only been fractured, but the limestone rocks on which they fell have been rent and shattered to a very striking extent. It ought not to be forgotten that *many* of the boulders would appear to have fallen on bare limestone rock, as there are no traces of drift or boulder-clay around or under them, so that

the circumjacent denudation of the limestone may have commenced immediately after the fall of the boulders. The absence of boulder-clay may be readily explained by the inability of submarine currents to transport it in an easterly direction across deep valleys and steep ridges, and finally up the steep and (in many places) overhanging face of the Eglwyseg cliffs.

6. *Boulders on Limestone Rock-surfaces near Clapham, Yorkshire.*—After walking about a mile and a half along Thwaite-lane, east of Clapham, and crossing one or more walls in a northerly direction, one arrives at the base of a steep limestone escarpment. On rounding the east end of this escarpment, and walking up a stone-covered slope on the left, the lower part of the great limestone plateau marked Norber on the Ordnance maps suddenly comes into sight. It cannot fail to be noticed that the surfaces of the limestone rocks are often flat, and terminate in miniature cliffs with steep brinks, as if whole blocks or fragments of rock had been removed by land ice, floating ice, or, according to Professor Phillips, by powerful currents. Partly resting on fragmentary rocks, and partly on flat and extensive rock surfaces of a light grey colour, there is what may appropriately be called a grim array of many hundreds of huge and black Silurian grit and slate boulders, which are apt to suggest the idea that they are about to spring into life! I think it must be obvious to any one who has made the pedestals of boulders a special study that many, if not most, of these boulders have found resting-places on pre-existing fragmentary projections of limestone rock, after the manner of the perched blocks which may be seen in all countries which have undergone extensive glaciation, and I have little doubt that, had Mr. Tiddeman's attention* been particularly directed to the subject, he would have agreed with me that the formation of the pedestals must have partly, if not chiefly, taken place before the boulders were left on them by the melting of the ice which transported them. But Mr. Tiddeman's object was the more important one of discovering glacial striæ on the pedestals under the boulders where they had been protected by the boulders from the action of rain.

7. *Evidences of the Pre-existence of many of the Pedestals.*—That many of the pedestals must have existed before the arrival of the boulders would appear from the following facts:—1. Many of the boulders have no pedestals, and many

* See *Quart. Journ. Geol. Soc.*, vol. xxviii.

have pedestals which do not fit the boulders; in other words, a pedestal may look narrower than a boulder when viewed endwise, but wider than a boulder when viewed sidewise; many boulders resting on flat surfaces may be seen projecting over miniature cliffs, and many have two or more pedestals with vacant spaces between them which could not have been excavated after the arrival of the boulders, because the latter would have protected the underlying rock-surfaces from the action of rain. In the case of the Norber boulders, which rest on divided pedestals with one or more vacant spaces under which preserved glacial striæ may be seen on looking in from without, it is clear that the vacant spaces could not have been excavated by lateral pluvial action after the arrival of the boulders, because the pluvial or any other kind of aqueous action would have obliterated the striæ.

The following figures will give an idea of the more typical supports of boulders on Norber plateau:—



Fig. 2.

Fig. 2 represents a boulder resting on a flat limestone rock. The depression on the right probably existed before the boulder came into its present position, otherwise there ought to have been likewise more or less of a depression on the left.



Fig. 3.

Fig. 3 shows a boulder mainly resting on flat rock, with a small subsidiary pedestal. It is clear that both must have existed before the arrival of the boulder.

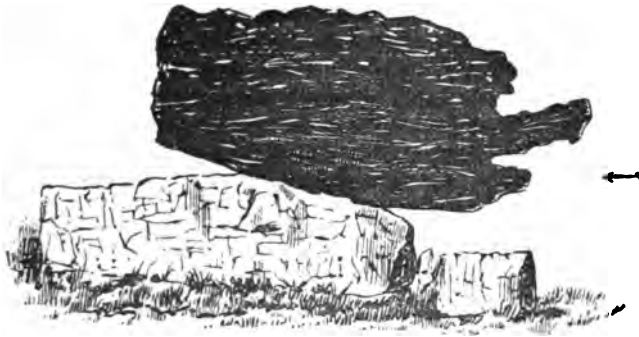


Fig. 4.

Fig. 4, when viewed in the direction of the arrow, appears to have a pedestal much narrower than itself; but, when seen side-wise, the pedestal (not fitting the boulder) would seem to have existed before it was usurped by the boulder.

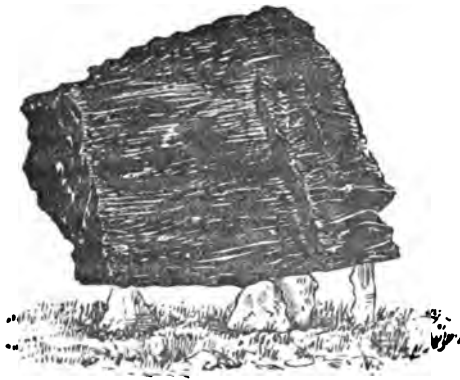


Fig. 5.

Fig. 5 is a view of a *typical* perched block which must have been tranquilly laid down by melting ice on pre-existing fragments of rock.

8. *Pedestals Formed since the Arrival of the Boulders.*—These pedestals vary from almost nothing to about seven inches in height. Those of them which, from their shape, would appear to have been left by the splashing down of rain-water from the boulders, may average about six inches in height, or nearly the same as the pedestals on the Eglwyseg

plateau near Llangollen. I do not remember having seen boulder-clay on the surface of the flat limestone rocks of the Norber plateau, though the spaces between many of the blocks in situ are often partly filled with a kind of grass-covered earth which may have resulted from the accumulation of the insoluble part of the limestone. On the supposition that the boulders were transported by a great sheet of land-ice (as Mr. Tiddeman believes), little or no boulder-clay would be allowed to gather, according to Professor Geikie (*Pre-historic Europe*, p. 289). Had the sea, with boulder-laden floating ice, swept over the high rocky plateau, there would have been still less likelihood of boulder-clay being deposited.

9. *Rainfall of the Above Plateau.*—It may be desirable to compare the rainfall of the two plateaux described in this paper, especially as in, or near to, the two localities it was very nearly the same in 1881. At Austwick, near Norber plateau, it was 41·70 inches, while at Llangollen, it was 42·81 inches. According to Professor Phillips, the mean annual depth of rain, from 1837 to 1850, was 43·3 at Settle (which is not very far from the Norber plateau).

10. *Pedestals of Boulders in Ireland.*—My attention has lately been directed to a work entitled *Fissures, Fractures, and Faults*, by Mr. Kinahan (of the Irish Geological Survey), in which he states that on the Arran Islands, where the rainfall is great, the limestone has weathered away from four to six inches since the glacial period, as proved by the unweathered pedestals of limestone under the erratic blocks; while inland similar pedestals are seldom three inches in height.

11. *Bearing of the Above Facts on the Time which has elapsed since the Close of the Glacial Period.*—After making a series of calculations based on the results of observations made in the two districts described in this paper, I was led to the conclusion (as already hinted) that the *average* depth of the hollows which have been excavated around boulders by the pluvio-torrential or mechanical action of rain-water (assisted by its chemical action under favourable conditions) is *not more* than about *six inches*. With regard to the rate of denudation, the extension of many flat rock-surfaces under boulders (especially on Norber plateau) shows that it must be exceedingly slow. But if we allow a thousand years for the excavation of only an inch in depth of the hollows around the boulders, this would give us not more than 6,000 years as the time which has elapsed since the boulders were left in their present positions through the melting of the ice by which they were transported. These calculations are only vaguely

approximate, but I think they are sufficient to show that many geologists have shown a tendency to exaggerate the time which has elapsed since the close of the glacial period.

12. *Fresh Appearance of Ice-marks and Moraines.*—Whatever difference of opinion there may be concerning the time indicated by the height of the limestone pedestals of boulders, all must admit that the recency of the close of the glacial period is forcibly suggested by the extent to which ice-marks on rocks have been preserved in positions where they could never have been protected by drift from atmospheric action, and where their freshness is consequently owing to the comparatively short time they have been in existence. In many of the upper valleys of Cumberland, glacial moraines present so fresh an appearance, that an unsophisticated person newly introduced to the district might readily suppose that they had not been more than two or three years in existence. On some of these moraines stones must have been so delicately equi-poised on each other by the retreating glacier, that a touch of one's finger would now be sufficient to make the fabric topple down!

13. *Perennial Snow or Ice on High Plateaux during Neolithic Times.*—Professor Geikie, as already stated, is of opinion that the second great glacial period was divided into two by a mild interval. But though this may have been the case in Scotland, or farther north, it may not have been so (at least to the same extent) in England and Wales; and I think we are therefore at liberty to believe that on the *high plateaux* in the north of Wales and England, which form the main subject of this paper, ice, or ice alternating with snow, may have been perennial, though it may have been different in the lowlands and farther south. If so, ice or snow on the Eglwyseg and Norber plateaux, which rise to between 1,000 and 1,300 feet above the sea-level, may have lingered until about 6,000 years ago, so as to protect the supports of boulders from the action of rain.

14. *Close of the Glacial Period in North America.*—It is well known that many American geologists (including several who have been honoured by the Council of the Geological Society of London) are convinced that the glacial period in the Niagara and Michigan district terminated so late as about 6,000 years ago. From recent reports it would appear that the Niagara Falls have lately been receding at about the rate of ten feet in twenty-four years, or about two and a half feet in a year; and this accords with the results of observations made by the late Mr. Belt and Dr. James Hall, who found that the Falls had receded in solid rock about three miles since the Niagara

channel had been partly filled up with glacial drift. Dr. Andrews has made a series of very precise observations on the raised beaches of Lake Michigan, which show that the surrounding country rose out of the glacial sea between 5,500 and 7,500 years ago. Many rivers besides Niagara have made new channels in the glacial drift by which their old channels were choked up.

15. *Astronomical Proofs of the recent Close of the Glacial Period.*—According to Lieut.-Colonel Drayson, in the *Quart. Jour. Geol. Soc.* for 1871, it would appear that 13,000 years before Christ the Arctic circle came down to latitude $54^{\circ} 35'$ N., or to about the latitude of St. Bees and Whitby. The climate commencing about 21,000 years ago, would become more and more extreme up to about 15,000 years ago, and then gradually more and more equable to about 6,000 years ago.

16. *Historical Objection to the recent Close of the Glacial Period.*—Some notice ought to be taken of an objection to the recent termination of the glacial period made by Professor Bonney, on the ground that, if it came to a close so late as 6,000 years ago, the climate would have continued down to 3,000 years ago sufficiently cold to excite the notice of historians. But, according to Colonel Drayson's calculations, the climate would have lost its extreme character much earlier than 3,000 years ago. It may likewise be remarked that glacial conditions in Britain never extended farther south than the Bristol Channel and Thames estuary, so that in countries farther south the climate 3,000 years ago may not have been sufficiently extreme to invest it with historical interest.

THE CHAIRMAN then said, I am sure all will be glad to hear the remarks any one present might have to offer.

Mr. E. CHARLESWORTH, F.G.S. (a Visitor).—Geological science is one of those branches of human investigation which, charming and attractive as it is to all who love the attempt to increase the boundaries of human knowledge, is nevertheless, one which I have felt, ever since I first took it up as a study, to be replete with uncertainties; and of all the uncertainties that beset the geologist in his pursuits I think the one I should single out as *par excellence* the most perplexing, and the most unsatisfactory, is the attempt to measure geological time. Some of the greatest writers on the subject of geology have told us that there are evidences of life having existed on this planet countless years ago, and that, in point of fact, we can only gain an idea of geological time by comparing it with what we may term astronomical time. We know that we may penetrate millions of miles through space, and then be no nearer its confines than before. But when we are told by great authorities

that geological time is capable of sustaining such a comparison, and when we consequently begin to speak of millions of ages as a mere atom in the ocean of geological time we find ourselves confronted with another class of men, of equal authority with those to whom I have alluded, who say that such a way of putting the matter is open to question, and that a hundred thousand, or at most a couple of hundred thousand years afford ample time to account for all the phenomena we see around us, or which the geologist finds presented to him, when he digs, tunnels, or mines into what, as a conventional term, is called "the crust of the earth." But we are also brought face to face with another class of authorities who tell us that hundreds of thousands of years are altogether out of the question, and that the time necessary for the production of all these phenomena can be comprised in a period of some thirty, forty, or fifty thousand years. There are also a few men of unquestionably high standing and whose ability is deserving of the highest appreciation—among whom I may mention Dr. Dawson, whose book on geology no one can read without acknowledging that it is written in a thorough spirit of geological research, and is based on a great amount of good reasoning—who say the Scriptural record will account for everything, so far as we have yet known it. Well, then, amid all these conflicting opinions how is it possible for us to arrive at anything like a generalisation with regard to this matter, such as we can unhesitatingly accept? The only answer I can give is that the case is hopeless. But do not let me convey to the minds of those present the impression that, therefore, geology is one of those studies which can be taken up without a feeling that there are grand truths, and grand generalisations, to be deduced from it, as to which we are all agreed. I feel that Mr. Mackintosh has given us a most interesting paper. One of what I think he considers his strong points is this: Referring to the case of a boulder found in a certain position—it might be supposed that that boulder had been taken up by one of those huge masses of floating ice, of which he speaks, and that, when the temperature was heightened and the seas melted, the boulder fell to the bed of the ocean. There, of course, the boulder remained, and then came a period of elevation, during which the bed of the sea was thrown up, and the boulder, being on the surface, became exposed to the action of rain—Mr. Mackintosh says the rain beats down on the boulder, and drops of water are driven off in a shower of spray, which cuts a channel round the boulder; and he is inclined to think that the time these channels take to form is represented by one inch of depth to a period of one thousand years. This is a very ingenious idea; but, to my mind, it simply amounts to this—that the next observer may say he thinks that an inch of excavation represents ten thousand years, while another may say that an inch represents twenty thousand years, and another may assign a longer period. I think Mr. Mackintosh has overlooked one thing, namely: Supposing the channel which is found surrounding the boulder has been cut out by the spray that has fallen from the boulder, when the first gutter begins to be formed the water falling from the boulder

would lie in it, so that the spray falling upon it after it is filled would not have one hundredth part of the mechanical power the first drops would have. If the gutter be three or four inches wide, and the same depth, the spray falling into it would, perhaps, only have the power of deepening the channel one inch in a very long period. This is a point Mr. Mackintosh seems to have overlooked. Among the natural phenomena he mentions are the Falls of Niagara. I remember that when I first read Sir Charles Lyell's book I was delighted with his measurements of geological time, as illustrated by those Falls. He said he saw the river cutting its way through a series of rocks, and he found that the Falls retreated a few inches every year. By measuring the number of inches so cut away, he arrived at the conclusion that, at the very lowest computation, it must have taken the river over thirty thousand years to cut the length of channel it had excavated. Now, when I visited the Falls of Niagara and went to the bottom of the ravine, and passed along the ledge of rock that runs between the water and the rock, I found that there was a constant spray of water from the waterfall washing the face of the rock, and that the Fall thus acted on the face of the precipice of rock more or less according to the direction and force of the wind; and I felt how much the amount of wear of the rock must depend upon influences which are not always taken into consideration.

General G. SKENE HALLOWES (Acting Honorary Secretary).—I observed the same back action of the spray from the Fall when I was at Niagara, but, the weather being calm, it was not so excessive as some have described it to be.

Rev. W. B. GALLOWAY, M.A.—Perhaps I may be permitted to remark that the glacial theory, as held by Mr., now Professor, James Geikie, amounts to something very astonishing. It supposes that in Scotland and in England—at least in the northern part of this country—there was a glacier—a continuous one—of from 2,500 to 3,000 feet in thickness; that in the whole of Switzerland, or at least the valley between the Alps and the Jura, the ice was piled up in an unbroken mass to, at least, the same thickness; that in Sweden and Scandinavia, generally, the ice was 7,000 feet thick, and that in Connecticut, according to Professor Dana, the thickness of the ice was from 6,000 to 8,000 feet. Now, the great ice barrier at the antarctic pole was calculated by Sir James Ross to be 1,000 feet in thickness, so that in the estimates I have mentioned we have placed before us for belief something really prodigious. At one time, when it was the general opinion that a universal Deluge had covered the mountains, as the Scriptures relate, there was an objection made that there was not so much water as would produce that result. But this difficulty does not really exist to the same extent since Lyell affirmed that the depth of the water is fifteen times greater than the height of the land, and also, that two-thirds of the globe are covered by water. But what strikes me as an extraordinary change in the position taken upon this question is, that while the objection formerly made to the Scriptural account of the Deluge was that there was not enough water to cover the land, we are now asked to substitute for the water an

enormous quantity of ice—a deluge of ice for a deluge of water. Then Sir William Thompson, of Glasgow, comes in with the opinion that it has taken from twenty millions to two hundred and forty millions of years for the cooling down of the earth to its present temperature; all this enormous thickness of ice having been in the intermediate period, while the slow cooling of the earth has been going on according to Sir William. There are, certainly, evidences of tropical and semi-tropical temperature even in the London basin. Is it not an extraordinary contradiction to assume that, while there are these tropical or semi-tropical indications, there was this ice-sheet? And furthermore, as to the termination of this period, how are we able to say that it has yet terminated? It is not so many years since an elephant, embedded in ice at the mouth of the river Lena, was disclosed by the breaking up of a great mass of ice, and there are similar things continually occurring now. The glaciers of the Alps are even now diminishing in volume, and this diminution may account for the circumstance referred to by the last speaker. Now, it seems to me that the paper read to-night has put forward one very remarkable circumstance namely, that more than one of our great boulders had evidently fallen from a great height, and had broken the rock underneath it. This, of course, indicates *floating* ice, which may have been carried on the waters of the Deluge. At the time I first made acquaintance with geology—when Cuvier had obtained his celebrity, and Buckland had published his *Reliquiæ Diluvianæ*—Cuvier remarked on the subject of the ice which had disclosed the elephant at the mouth of the Lena, that the cause must have been sudden. It must have been as sudden a cause which brought the animal into its position among the ice as the freezing up of the elephant itself; for it was so fresh when embedded in the glacial ice, that, when some thousands of years afterwards it was brought to view, the wild dogs fed upon its carcase. The skeleton is now preserved in the Museum at St. Petersburg. Cuvier remarks further, in regard to the causes to which the glacial period has been attributed, one of them being the very slow alteration of the earth's orbit, that no gradually operating cause, such as that which is imperceptible even in thousands of years, could possibly account for a sudden change of climate, which must evidently, at once, have frozen up that large animal in thick ice, and preserved it from the effects of a temperate atmosphere for thousands of years. If the cause were a universal Deluge, as Cuvier believed—and I do not know that we have had a greater geologist since—then I think it is time for us to re-consider the changes which the theories of geologists have been undergoing. They are evidently now working their way back from the 240,000 years ago, which is the date of the glacial epoch, as assumed by Professor Geikie, and which was further assumed by Mr. J. Scott Moore, in his *Pre-glacial Man*, and by Lyell, who supposes it may have occurred from that period to a million years ago. Surely this gradual diminution from a million of years, or hundreds of thousands, may lead us to hope that science is at length coming back to its older, and, I think,

sounder frame of mind, when Cuvier and Buckland were at the height of their celebrity ; and I would earnestly press upon those who may feel an interest in the subject of geology to examine whether there is not more reason in believing that there was a universal Deluge than there is in a belief in the existence of ice 8,000 feet thick in Connecticut, 7,000 feet thick in Scandinavia, and 3,000 feet thick in Scotland, while beds of similar thickness filled the whole of the valley between the Alps and the Jura, in Switzerland, so that blocks of granite slid down from the Alps, carried by that huge glacier, and planted themselves on the Jura. I do think that, under the circumstances, I may be pardoned for retaining the impressions created by my earlier studies, and for holding that no more doubtful scientific conjecture has ever been put before the public than is contained in the glacial theory, treated on in the writings of Lyell, and of Dr. James Geikie, in his published work, entitled *The Great Ice Age*. I trust I have not been inaccurate in any of the statements I have made ; but I did not notice until yesterday that this subject was to be brought forward, and I have not had time to refresh my memory in regard to it. There is one point on which I would supplement what has been said with regard to the cutting of the river channel by the Falls of the Niagara. Is it not assumed that the rock through which the river is cutting that channel has always been of the same hardness ? We know that there was a human skeleton found in a rock in the West Indies, and that it is now in the British Museum. When that man's body first became embedded in the limestone it could not have been as hard as it since became. Is it not, then, very conceivable that at the period the Falls of Niagara began to cut their present channel, the rock may have been very much softer than at the present day, and much in the same condition as that limestone ?

THE CHAIRMAN.—It struck me, as I read the paper, that the weak point in it was, what appeared to be, the arbitrary assumption as to the cutting of one inch of channel round the boulders, in a thousand years.

MR. CHARLESWORTH.—Quite so.

MR. HASSELL suggested that if there were any earth round the boulders there would be a very great alteration in the course of time.

MR. CHARLESWORTH.—I should suppose that if any of those boulders were on the soft earth the rain would soon sweep away a good deal of it.

MR. HASSELL.—I agree with Mr. Charlesworth as to the uncertainty of calculations which are based on the assumption that what has happened in the past has gone on at the same rate as what is occurring now. It was well known that a severe frost, in a particular year, will break off many inches, or even yards, of rock ; and in the case of Niagara one sharp winter might have the effect of rending away several feet of the rock. I do not think any one would hold that denudation goes on at the same rate during all periods of time. The inference is in favour of the rate differing with varying circumstances. Then again, as to the supposed thickness of the ice in Scandinavia and elsewhere during the

glacial period, it appears to me to be little more than an assumption. If there has ever been a mass of ice—a sea of ice—13,000 feet thick formed from water, it would have required many thousands of feet of water for its production, and as all water forms ice at the surface first, and thickens gradually downwards, the degree of cold sufficient to have formed such an immense thickness must have been very intense. But much of the ice of the glacier period was not confined to the ocean, it is said to have swept the whole surface of Europe. Now, where did these mighty masses come from? If from the sea, how did they reach the upper mountain valleys, such as those of the Alps and the Jura? If formed as the glaciers in those places are now, namely, by the pressure of the snow in the upper parts of the mountain valleys, where did all the snow come from? Snow is very light, and much more expanded than ice, so a much greater thickness of snow must have fallen than the thickness of the glacier formed out of it. What a prodigious fall of snow that must have been which resulted in the formation of a glacier 8,000 feet thick. Here, then, it appears to me that much more information is needed before one can accept the conclusions of some geologists as to the extent and duration of the so-called great ice age. On the whole, I think we cannot fairly base any conclusion as to the antiquity of man on the data that have yet been furnished.

The meeting was then adjourned.

REMARKS ON MR. MACKINTOSH'S PAPER

BY PROFESSOR T. RUPERT JONES, F.R.S.

I have carefully read Mr. Mackintosh's paper, and, taking his data as established, I do not find any adverse criticism to offer; quite otherwise, his statements and arguments are very clearly put.

I may remark that the results of the Rev. Osmond Fisher's calculations as to the time when the "Recent Period" (equivalent, I presume, to the end of the last glacial period) began, coincide generally with Mr. Mackintosh's views. That is, Mr. Mackintosh looks back 6,000 years, and the Rev. O. Fisher to about 8,000 years for the same, or nearly the same, period.

See my reference to the Rev. O. Fisher's calculations, and other correlative matters, in the Proceedings of the Geologists' Association, vol. viii., 1884, No. VI., p. 352.

BY THE REV. HENRY BRASS, M.A., F.G.S.

Mr. Mackintosh's idea derives strong corroboration from the comparatively recent formation of the deltas of the rivers of the Alps.

For example, the delta of the Rhone, in the Lake of Geneva, has, according to Sir C. Lyell (*Principles of Geology*, chap. xviii., 8th ed.), increased "more than a mile and a half," "in about eight centuries."

He states that the remainder of the delta is "about five or six miles in length," so that, at this rate, the delta is less than 4,000 years old; and, as it narrows and shallows towards its apex, even this estimate must be considerably reduced.

Now, what was the river doing with its sediment *before* it commenced to form the delta? Possibly, as Lyell suggests, it was filling up some lake basins in the upper part of its course, but as the contents of these basins (as I gather from frequent observation) do not much exceed (if they do at all) the contents of the delta, and as many of them may have been filling (partially, at least,) contemporaneously with it, we cannot but be forcibly impressed with the comparatively recent origin of the present physical condition of the country.

Or, did the river (as some have conjectured) formerly flow through the Valley of the Trient into the Arve, at Chamouni? This would not have been possible without very great alterations of level, inasmuch as the Valley of Chamouni is about 2,000 feet higher than that of the Rhone at Martigny, and the lowest point between them is about 3,500 feet higher!

The most probable conjecture seems to be that the Great Rhone Valley was filled with ice, and that the *Alpine glaciers extended down into the Lake of Geneva*, a very few thousand years ago; and that *on, or soon after*, the retreat of the glacier, the delta began to be formed.

I wish that competent observers would work out this problem in the case of other Alpine deltas.

With reference to the last paragraph of Mr. Mackintosh's paper, I cannot but think that there is good historical evidence, *that climate has been undergoing a change.*

E.g.—(1) Job apparently dwelt in the land of the Crocodile and Hippopotamus ("Leviathan" and "Behemoth"), yet he mentions "ice" twice, "snow" five times, and "frost" three times; and speaks of streams "blackish by reason of the ice," and "tho face of the deep is frozen;" phenomena hardly to be found in those lands in the present day! (2) So also the way in which the old Roman historians and poets speak of the Winter seems to imply that the climate was much more severe in their day:—

c.g.—*Horace* (1 Odes, ix.) ". . . . geluque
Flumina constiterint acuto."

Hard frozen rivers are certainly not characteristic of the Roman Campagna *now!*

Livy speaks of armies going into winter-quarters as a general custom.

Even the great Hannibal went into winter-quarters at Capua. But, surely, the winter is the only pleasant and suitable time for physical exertion in the *Capua of to-day*!

Doubtless, many other illustrations of this point will occur to those present at the meeting on Monday. And, indeed, one can hardly conceive it possible for the hot and enervating climate of *Modern Italy* to have developed so hardy and vigorous a race as the ancient Romans!

The same remark would, more or less, apply to the ancient Chaldeans, Assyrians, Medes and Persians, Egyptians, and Greeks, who, in this respect, contrast most favourably with their modern representatives.

FROM THE REV. W. GUEST F.G.S.

The paper of Mr. Mackintosh has evidently been written after a close personal examination of the phenomena in question, and, considering the brevity to which the author has confined himself, is one of remarkable clearness. I regret that I cannot be present when the paper is read, but, as a member of the Institute for some years, I should be deeply obliged if the expression of my personal thanks could be conveyed to the writer.

To me it has been evident for several years that the question which would come to the front in geological research was that of the probable date of the close of the Glacial Period. The Victoria Institute has done the very highest service in accentuating the importance of this inquiry, and it is very much to be wished that, after the manner of the British Association, there were a fund at its disposal to encourage investigation. No research could yield more valuable results, or help better to throw light on very critical problems. It is too much to expect gentlemen to pursue on their own account such laborious studies, journeys, and field inquiries, as the subject demands; but Mr. Mackintosh has led the way, and placed all members of the Institute under the greatest obligation. It is of moment that the matter should not rest at this point.

• MR. MACKINTOSH'S REPLY.

I thank the speakers for their kind comments. In reference to a remark by the Rev. W. B. Galloway, on the glaciers, I may say that Professor J. Geike believes that small glaciers came down the Scottish glens to near the sea level as late as the Neolithic times, if not later. In regard to another point, I would say that on the Norber plateau in Yorkshire, in many places rain falling from boulders has made no impression on the surrounding flat limestone rocks. I wish to add that there is much truth in Mr. Charlesworth's remark on the mere mechanical action of rainwater on limestone rocks; but when the chemical and mechanical action are combined, there must be lowering of the surface to a considerable extent.

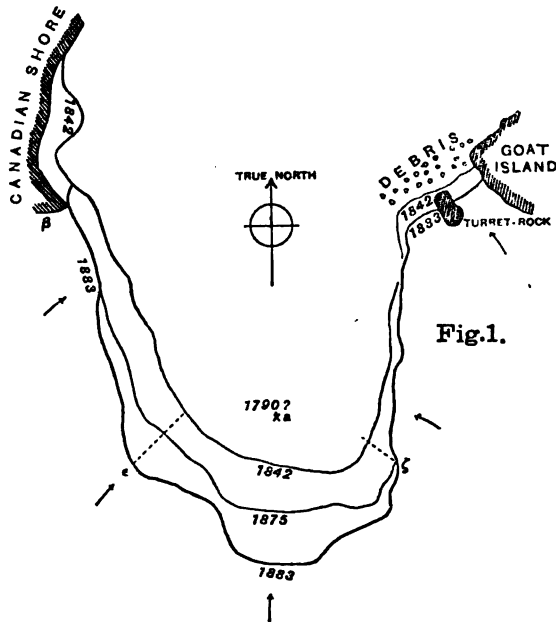
NOTE ON NIAGARA FALLS.

The following diagrams are from the map issued by the New York Commission, which is based on surveys made in 1883 by Thomas Evershed, under the direction of the State Engineer. The Institute is indebted to the proprietors of *Nature* for their kind permission to insert the diagrams and accompanying remarks.

The diagrams give the outline of the Falls as determined on three surveys, namely ; The New York Geological Survey of 1842 ; The United States Lake Survey of 1875 : and The Survey of 1883.

Mr. E. Wesson; of Providence, R.I., remarks on these diagrams as follows :—

“I divide the contour from β to Goat Island into thirty-three sections, disregarding for obvious reasons the overflow north of β , on the Canadian



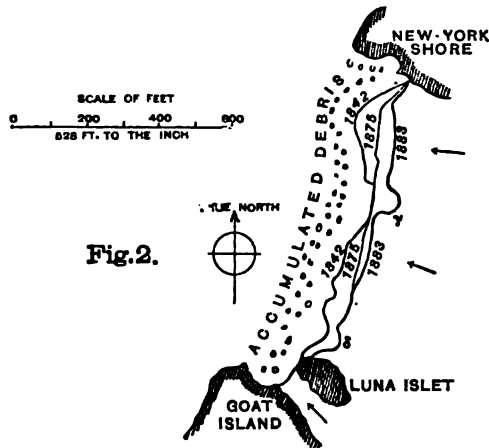
shore. From β to ϵ are eleven sections, from ϵ to ζ are twelve sections, from ζ to Goat Island are ten sections. It is obvious that much the greater work has been done between β and ζ , and that the innermost recess has kept in the same relative position.

"The means of the measurements on the sections, along perpendiculars from the contour at the date of each survey, measured on a tracing of the published map, give the following results for the Canadian Fall (Fig. 1):—

	33 years ending in 1875. ft.	8 years ending in 1883. ft.	41 years ending in 1883. ft.
Mean aggregate recession along contour of 2,000 feet, from β to Goat Island ...	80	—	114
Mean aggregate recession along contour of 1,200 feet, β to ζ =	—	60	—
Mean annual rate of regression along the whole contour where a visible change was effected =	$2\frac{1}{2}$	$7\frac{1}{2}$	$3\frac{1}{4}$
Total maximum regression at the inner- most recess =	118	135	253
Annual rate of maximum regression = ...	$3\frac{3}{4}$	$16\frac{1}{4}$	$6\frac{1}{4}$

"The 'American' Fall, measured in ten sections, gave a total mean recession of $37\frac{1}{2}$ feet in the 41 years ending in 1883, which is at the rate of about 10 inches per annum.

"I do not know that I have seen any estimate attempted of the relative volumes of water passing over the two Falls. From such imperfect data as I have, referring to depth and swiftness, I should think that the rate of erosion for each Fall gave some approximation to the volume of water



discharged over each; that is to say, $2\frac{1}{2}$ feet per annum for the Canadian Fall, $\frac{1}{4}$ foot per annum for the 'American' Fall, would signify that the former pours over its brink three times as much water as the latter.

"At the rates of recession above shown it is evident that at no very remote age the two Falls were united in one when abreast of the point in Fig. 2 marked 'New York Shore,' and the entire width was about the same as that of the present Canadian Fall alone. Moreover, the mean width of the

Fall, from the time it commenced its work at the 'heights,' seven miles below its present position, according to Lyell's statement as to the gorge of Niagara River, was not greater than the present Canadian Fall. Adding together the present work done by both Falls, we should have about $3\frac{1}{2}$ feet per annum as the backward work performed when the entire volume poured over a single Fall of the width of the present Canadian Fall.

"At this rate 10,000 years would seem sufficient time for the cutting out of the present gorge terminating at the 'heights' towards Lake Ontario," instead of 35,000 years, the hitherto accepted estimate of Lyell, which was arrived at in the absence of the more perfect data which modern research has placed within our reach.

ORDINARY MEETING, JANUARY 5, 1885.

W. N. WEST, ESQ. (HON. TREAS.) IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

LIFE MEMBER :—J. L. Currie, Esq., Australia.

MEMBERS :—Right Rev. Bishop Fallow, D.D., United States ; Rev. W. H. Apden, S. Africa ; Rev. J. S. Forsyth, M.A., London ; Lieut.-General J. C. Haughton, C.S.I., Slough ; Admiral H. B. Phillimore, R.N., C.B., Bath ; Rev. G. S. Ramsay, United States ; Rev. F. A. Walker, D.D., F.L.S., London.

ASSOCIATES :—Right Rev. the Bishop of Sydney, New South Wales ; H. E. A. Allen, Esq., New South Wales ; Rev. S. T. Bosward, Luton ; Rev. J. H. Carlisle, London ; Rev. Prof. W. A. Crawford, United States ; President H. Darling, United States ; Rev. J. Donaldson, Romford ; Rev. P. L. Easton, Tiflis ; A. H. Elwin, Esq., C.E., Canada ; Earl Flint, Esq., M.D., Nicaragua ; J. M. D. Fry, Esq., Ph.D., United States ; E. Figg, Esq., M.D., Australia ; Captain C. E. Gissing, R.N., E. Africa ; T. Gribi, Esq., United States ; S. Gordon, Esq., M.D., Dublin ; Rev. J. Jenkyns, Cardiff ; Rev. Prof. S. H. Kellogg, United States ; J. E. Kimball, Esq., A.M., United States ; Rev. G. Lansing, D.D., Egypt ; L. A. Lambert, Esq., United States ; W. H. Levering, Esq., United States ; Sir F. Milner, Bart., M.P., London ; F. H. Piper, Esq., London ; Professor G. E. Post, M.A., M.D., D.D.S., Beyrout ; Rev. J. Shipham, Stockport ; Rev. E. B. Thayer, D.D., United States ; A. Tod, Esq., J.P., Peebles ; Rev. H. M. White, D.D., United States ; Rev. L. C. Williams, Wolverhampton ; F. W. Upham, Esq., LL.D., United States ; Rev. W. C. Winslow, M.A., United States ; J. M. W. Young, Esq., Lincoln.

HON. COR. MEMBER :—Right Rev. Bishop Herzog, D.D., Switzerland.

HON. LOCAL SECRETARIES :—General G. S. Hallowes, Middlesex ; Rev. A. R. Gregory, London ; R. Willis, Esq., M.D., Dublin.

Also the presentation of the following works for the Library :—

"Proceedings of the Royal Society"	<i>From the same.</i>
"Proceedings of the Royal Institution"	"
"Proceedings of the Royal Geographical Society"	"
"Proceedings of the Royal United Service Institution"	"
"Proceedings of the Royal Colonial Institute"	"
"Proceedings of the Royal Dublin Society"	"
"Proceedings of the Royal Asiatic Society of India"	"
"Proceedings of the Geological Society"	"
"Proceedings of the Society of Biblical Archæology"	"
"Proceedings of the American Geographical Society"	"
"Proceedings of the Bureau of Ethnology"	"
"Proceedings of the United States Geological Survey"	
"900 Miles up the Nile." By Rev. F. A. Walker, D.D., F.L.S.	

From the Author.

"The London Quarterly Journal"	<i>From A. McArthur, Esq., M.P.</i>
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Also smaller works by the Rev. Prebendary Row, Rev. R. Collins, Dr. Thompson, Mrs. Ince, &c.

THE RELIGION OF THE ABORIGINAL TRIBES OF INDIA. By Professor J. AVERY, of Bowdoin College, Brunswick, Maine, United States.

IF an apology were needed for bringing to the attention of students of religion the crude notions of savage tribes regarding their relations to the unseen world, and the often revolting practices which have sprung therefrom, this would not be founded solely upon the claim which they rightly make upon Christian philanthropy, but also on their scientific interest and value. If we have observed aright the course of thought at the present time, there is a growing disposition to study attentively all the systems of religion which at one time or another have been devised or accepted by men, with the view to discover their origin and the laws which have governed their development. There is a tendency also to withdraw the study of religion from the exclusive dominion of sentiment, and to apply to it the same rigid canons of criticism which have been used so successfully in other fields of inquiry. There has been a time when the Christian Church viewed everything called religion outside its own fold much as the Greeks looked at the world beyond the confines of their peninsula, and lumped together alien

beliefs of every variety and merit under the general title of heathenism; but, happily, a more appreciative spirit now prevails, and we are coming to see that there is much in other systems of belief which deserves our admiration,* and not a little that has served the Divine purpose in educating the world up to the understanding of a purer revelation. The study of religions has a scientific as well as a practical aim, and scholars have employed in it the inductive method of investigation with such a degree of success, that we may feel assured that the foundations are being laid for a science of religion. Indeed, some writers talk as if such a science were already constructed; but we are constrained to believe that this use of language is premature. So vast is the field of inquiry, so important is it that every part of its surface be explored and carefully mapped out, and so recently have scientific methods been employed in its survey, that investigators in this domain may well at present be content with modest claims for their study. It cannot be denied, then, that we shall not have a complete science of religions—much less of religion—until we shall have measured and deposited in its proper place in the building every variety of religious belief, no matter how crude it may seem, or how near the bottom of the social scale its professors may stand. If we feel any diffidence, therefore, in presenting to the members of the Victoria Institute a sketch of the religious beliefs and practices of the aboriginal tribes of India, it is not on the score of the subject possessing no intrinsic interest, but rather because of the present lack of materials in some parts of the field and our consequent inability to present the theme with the fulness of illustration desirable. And here we desire to express our great indebtedness to Colonel Dalton's invaluable work, the *Ethnology of Bengal*, without which many facts stated in the following pages would have been beyond our reach. Before proceeding with our inquiries, it will be useful if we state the location of the tribes to whom we shall repeatedly refer; for, though British power has existed in India for nearly two centuries, it has only been within a very recent period that we have been able to get trustworthy information concerning the aboriginal population; and even now that information is largely confined to the few persons whom official duties or missionary efforts have brought into close relations with it. It has been usual to divide these primitive races into three groups—viz., Thibeto-

* "Which deserves our admiration." Dr. Avery, in a letter which is appended, explains the intention with which he uses these words.—ED.

Burman, Kolarian, and Dravidian. Without entering upon the question of the correctness of this classification, or the ethnic connexions of its several members, we shall find it sufficiently convenient for our purpose.

The tribes comprising the first group are found in their most primitive condition scattered along the foot-hills of the Himalayas, from Nepal eastward to the farther extremity of Assam, thence along the range forming the eastern and southern border of that province back to the valley of the Ganges. Some tribes of the same stock are also found in the lowlands on either side of the Brahmaputra; but they have to so great a degree exchanged their ancient customs for those of the Hindus, that they offer fewer points of interest for our present inquiry than their kindred in the jungles upon the hills.

Following the route just indicated, we find on the northern border of Nepal the Kirantis, the Limbus, and some other tribes of inferior importance. Passing across Sikhim and Bhutan, whose inhabitants, the Lepchas and Bhutias, have adopted Buddhism, we come to the Akas, and, next in order, to the Dophlas, the Miris, and the Abors, which last tribe has settlements as far east as the Dibong, a northern tributary of the Brahmaputra. The Dibong serves also as an ethnic boundary, the tribes already named to the west of it showing a decided affinity to the Thibetans, and those beyond the stream exhibiting a closer likeness to tribes in Burmah. Between the Dibong and the Digaru are the Chulikata, or Crop-haired Mishmis. Next to these, on the north-eastern border of Assam, is another tribe, also called Mishmis, but differing in many respects from the one last mentioned. South of the Mishmis, partly within and partly beyond the eastern boundary of the province, are the Khamtis and the Singphos. Now turning westward, and still keeping within the mountain district, we come first to the numerous tribes of Nagas spreading westward to about the 93rd deg. of E. long. On their western border are the Mikirs and the Kukis. Continuing in the same direction across the Kapili river, we meet, first, the Syntengs or Jaintias; next, the Khasias; and last of all, at the end of the range, the Garos. At the foot of the Garo hills are the Pani-Koch, a tribe partly converted to Hinduism. The tribes of the lowlands might be left out of view altogether, were it not that their conversion has not been so radical as to quite efface their primitive superstitions. The most important of these tribes are the Ahams, the Chutias, the Koch, and the Kacharis. They are scattered here and there over the entire valley, and are reckoned as inferior castes of Hindus.

Crossing the lower Ganges valley, and ascending the rugged highland which forms the core of India, we find ourselves in the home of a most primitive population. Here tribes of both the Kolarian and the Dravidian stock, protected by the nature of the country, have long resisted the advance of a higher civilisation. Of the un-Hinduised Kolarians, the Santals occupy the Santal Parganas and the hill tracts of Orissa, on the eastern border of the highland. Adjoining this tribe, on the south and south-west, are the Bhumij, the Mundas, the Kharrias, and the Hos or Larka-Kols. Still farther south, in the tributary states of Cuttack, are the Juangs. In the Ganjam district of the Madras Presidency are the Savaras. Directly west of the Kharrias are the Korwas, and, extending in scattered settlements across the plateau to the Nerbudda and Tapti rivers, are the closely-allied tribes of Kurs and Kurkus. Of the Dravidian tribes, the Khonds live just north of the Savaras, in the tributary states of Orissa; the Oraons are found in Chutia Nagpur; the Paharias or Malers occupy the Rajmahal hills, where they overlook the Ganges; the Gonds spread over a large area in the centre of the plateau; while the Todas, Badagas, and one or two other small tribes, are far away on the Nilgiri Hills of southern India. It is hardly necessary to add that the tribes of the last group do not represent the whole Dravidian population; with the civilised portion, which constitutes the majority, we have here no concern. In addition to the tribes already named, there are certain partly-Hinduised tribes to whom we shall occasionally refer. These are the Cheros and Kharwars of the Shahabad and Palamau districts; the Parheyas, the Kisans, the Bhuihars, the Boyars, the Nagbangsis, and the Kauras about Palamau, Sirgūja, and Jashpur.

Proceeding now to the subject of our inquiry, after this preliminary explanation, we shall describe the religion of the aboriginal population under the following heads:—1st, the gods, and the kind of worship paid to them; 2nd, places of worship; 3rd, images and other representations of Deity; 4th, the priesthood; 5th, divination; 6th, witchcraft; 7th, the future life and the worship of ancestors; 8th, speculations regarding the origin of the world and of man; 9th, influence of Buddhism and Hinduism. It is almost needless to say that these tribes, without exception, and in common with the lower orders of men generally, have an unquestioning belief in the existence of spirits, both human and divine; sometimes they go even farther than this, and attribute to animals and inanimate objects immortal souls, like their own. The materialistic theories which have been reached by the speculations

of civilised philosophers seem never to have clouded their child-like faith. But, teeming as is the unseen world with beings created by a savage imagination, we are not to look for an orderly and consistent arrangement of powers and spheres of activity among these deities, such as we find in the Pantheons of Greece and Rome; rather, we are to expect the condition of things out of which these developed. Whenever such an elaborate system of theology is described as worked out by a tribe in other respects low down in the social scale, it is to be viewed with extreme caution, and by no means accepted as genuine, until attested by more than one skilful observer. An example in point is the account of the Khond religion by Major Macpherson. We shall be more likely to find confused and even flatly contradictory notions of the gods, blind attempts to properly adjust human relations with the higher powers. Though the gods served by these tribes are for the most part of a low order, scarcely rising above the level of their worshippers, still there are here and there indications of a dim conception of a God throned far above these inferior deities, and more deserving of reverence and love. We will first search for these. The Singphos have a tradition that in a former sinless state they worshipped a Supreme God, of whose attributes they can give no account; but that they fell from that condition, and have since adopted the superstitions of surrounding tribes. The Abors and Miris have a vague idea of a God who is the Father of all; but as they connect him with the abode of the dead, and call him Jam Raja, it is easy to see that their conceptions are derived from the Hindu god, Yama. The Kukis, who seem to have advanced farther in their reasoning, or borrowed more, believe in a Supreme God, whom they call Puthen, who not only created the world, but governs it and rewards men according to their deeds. It is in the last particular that their views are in marked contrast with those generally held by these tribes. Puthen has a wife, Nongjar, whose good offices as an intercessor with her husband can be secured by suitable offerings. The children of this benevolent pair are, like the other inferior gods, of a malicious disposition. With most of these tribes the sun is regarded as the impersonation of their highest god. The Garos call him Saljang, or Rishi Saljang, and sacrifice white cocks in his honour. They say that he resided for a time on the Garo hills with his wife, Apongma, and begat children, but subsequently returned to heaven, where he now dwells. The Bhuiyas call him Boram, and likewise offer to him a white cock at the planting season. He is worshipped by the

Kharrias under the name Bero, and every head of a family is bound to offer to him five sacrifices in a lifetime, each oblation exceeding in value the last one. The Hos and Santals call the sun-god Sing Bonga. He is represented as being self-created and the author of the universe. He does not inflict suffering, but is sometimes invoked to remove it when appeals to the inferior gods have proved ineffectual. The Hos observe a yearly festival in honour of him, at which a white cock and the first-fruits of the rice harvest are offered. Among the Santals, the head of the family, every third or fourth year, sacrifices a goat to Sing Bonga in an open space at sunrise. The Mundas pray to him when selecting the site of a house. The Korwas worship him under the name Bhagavan, a Sanskrit word. The Muasis pay homage to both the sun and the moon. The Oraons reverence the sun as Dharmesh, the Holy One. They say that he created the world, and that he preserves men, unless thwarted by the malice of demons. No oblations are presented to him, since his good-will is already secured. The Khonds are divided into two sects, if Major Macpherson's statement can be trusted. One sect worship Bura Pennu, who manifests himself in the sun, and is the creator and benefactor of mankind. The other sect have chosen as their highest object of regard his wife, the bloodthirsty earth-goddess, Tari, who demands a yearly offering of human victims. The Todas regard the heavenly bodies as gods, and address them in certain set phrases, but have no clear idea of their attributes or requirements.

It seems plain, from the facts cited, that most of the aboriginal tribes of India have some vague notion of a Power throned far above the world; who was concerned with its creation; who manifests himself in the heavenly luminaries; whose disposition towards his creatures is benevolent, but is sometimes unable to reach its aim; and who demands from them only a distant and formal recognition, or none at all. Whether these are vanishing traces of a primitive revelation, or the result of their own reflections, or have been borrowed from the religion, particularly the Hari-worship, of the Hindus, we will not here inquire. It is, at any rate, certain that the contemplation of their highest god has little effect in regulating conduct.

Another god of a similar character, but second in rank, is worshipped chiefly by the Kolarian tribes in Central India. This is Marang Buru, or Great Mountain.

Remarkable peaks, bluffs, or rocks not unnaturally suggested to their simple minds an idea of Divinity, and called

forth their reverence. Since from such places descend the streams which irrigate the fields, Marang Burnu has become the god to be invoked for rain. Offerings are made to him on the summit of the hill or other object in which he is supposed to reside.

It is not, however, with the superior gods and their decorous worship that we have most to do in describing the deities of these rude tribes. Their chief concern is to keep the peace with a host of minor gods, with whom their imagination has filled the whole realm of nature. In the forest, the field, the house—everywhere these beings throng. They are mostly of a jealous, revengeful disposition, and seem to take a malicious pleasure in teasing mankind. Fortunately, they are not insensible to human blandishments, and he is pretty sure to prosper who most assiduously cultivates their good-will, which can best be done by providing for them some toothsome dainty. It would be quite unnecessary to record lists of these lower gods, whose names are legion, since their attributes and the worship by which they are propitiated are everywhere of the same general type. A few characteristic examples will suffice. The Singphos recognise three spirits called Nhats, who preside respectively over the higher, the lower world, and the household. Offerings of fowls, dogs, and on special occasions a buffalo, are made to them. The Chulikata Mishmis declare that the spirits whom they worship are mortal like themselves. The gods of the Abors and Miris dwell in the trees of the woods which cover their hillsides. They love to kidnap children, whom they can generally be made to restore by proceeding to fell the trees in which they reside. The Nagas say that their gods are created beings, and they are accustomed to vary their offerings according to the dignity of the recipient. Semes, the god of wealth, gets the larger domestic animals; Kuchimpai, the god of fertility, receives fowls and eggs; while Kangniba, who, on account of blindness, cannot distinguish offerings, gets nothing of any value. They believe that each disease is the work of a special demon, whose business and pleasure it is to spread it abroad; but his malicious design is sometimes thwarted by hanging bunches of withered leaves on the lintels of the door to frighten him, or branches of trees are stuck in the paths leading to the village, that the spirit may take them for untravelled ways. Since the tiger is of all beasts in India the most dreaded, it is not strange that a tiger-demon should be recognised. He is worshipped by the Kisans, who think in this way to escape the ravages of that animal. Among the Santals, in Ramgarh, only those who

have lost relatives by the tiger think it necessary to propitiate the tiger-demon. The Gonds also pay him reverence. Since the deities of these tribes are anthropomorphic, it is a matter of course that gender should be allotted them; hence goddesses are frequently worshipped, and they show themselves not a whit behind their male consorts in malignant and blood-thirsty disposition. The Bhuiyas and Savaras, though recognising the benevolent sun-god, pay special honour to a savage goddess called Thakurani, who was formerly propitiated by human sacrifices. It is thought that upon her worship is founded that of the Hindu Kālī, who once received human victims in this very part of India.

But the most remarkable system of human sacrifices, in connexion with the worship of female deities, was that instituted in honour of Tari, the earth-goddess of the Khonds. Since she presided over fertility, victims were immolated chiefly at the time of sowing. The persons destined for sacrifice, called Meriahs, were kidnapped from the plains or from other tribes, and, under strict guard, were petted and fed like cattle fattening for the slaughter. Children were allowed to grow up, and were encouraged to marry and rear families, but parents and offspring were equally devoted to the goddess, and were liable at any moment to be sacrificed to quench her thirst for blood. When the time of offering came, the body was hacked into small pieces, and each worshipper struggled to secure a shred of flesh or piece of bone to bury in his field. It has been about forty years since an end was put to these horrid rites by the combined efforts of Major S. C. Macpherson and General John Campbell. The Khonds say that Tari lives in heaven with her beneficent husband, Bura Pennu, while numerous inferior gods roam the earth, seen by the lower animals, but invisible to men. It cannot be doubted that the custom of human sacrifice was once wide-spread in India, as indicated not only by the facts just stated, but by the practice of sham offerings existing among other tribes at the present time. The Oraons and Gonds even now make a wooden or straw image of a man, and after prayer to a divinity for the blessings desired, sever its head with the stroke of an axe. As a general rule, the inferior gods stand in no clearly-recognised relation of dependence upon the superior gods. Their will is usually exercised independently of higher control. We have noticed an interesting exception in the case of Kols, who assert that there are certain blessings reserved for the sun-god, Sing Bonga, to grant; and that offerings made to the lower gods will induce them to intercede with their master in behalf of the supplicants. One of the

simplest, most childlike forms of worship is that practised by the Todas on the Nilgiri Hills of Western India. Almost the sole means of support possessed by this tribe are their herds of buffaloes; hence these, together with the implements and persons specially connected with them, have come to assume a sacred character. Certain old cow-bells, said to have come originally from heaven, are worshipped as gods; and the priests or milkmen who tend the sacred buffaloes, of which several herds are specially set apart, are during their time of service also gods, and as such cannot be touched by any mortal. The duty of the priest is to perform a few simple rites daily before the cow-bells, and to care for his buffaloes, in which labour he is assisted by a semi-sacred herdsman. He can return at pleasure to ordinary human life, when, though no longer the embodiment of deity, he is treated with marked respect. The Todas believe in other gods, who are invisible, and whom the priest salutes as fellow-deities, but their ideas regarding them are extremely vague.

The residence of the gods is sometimes localised by these aboriginal tribes as heaven, some distant and lofty mountain peak, a huge rock, or a grove of ancient trees. Spirits who are likely to prove good neighbours are sometimes enticed to take up their abode near a village by liberal offerings. Among the Kolarians of Central India every village has several sacred groves consecrated to tutelary gods. The trees in these groves must be left undisturbed on pain of divine displeasure. It is true, as a rule, that the Thibeto-Burman and Kolarian tribes construct no temples nor images of their gods, while images, or something answering to them, are common among the Dravidians. Still, among the former tribes, there is usually some spot where village or family worship is commonly performed, and which is marked by certain objects designed to suggest the sacredness of the place. The Garos set up before their houses bamboo poles, with fillets of cotton or flowers attached, and before these make their offerings. The same thing is done by the Limbus. The Kacharis, the Bodo, the Mishmis, and some of the tribes of Central India worship the Sij (*Euphorbia*) plant as an emblem of deity. The Juangs, Kharrias, and Korwas regard the ant-hill as a sacred place, and use it to take an oath, or to sacrifice upon. The Akas alone of these north-eastern tribes have images of their gods, and little huts to serve for temples; but, as they are partly converted to Hinduism, this custom is probably derived from that source. In the villages of Dravidian tribes one finds some objects set up to represent the tutelary gods. These are often rude in shape—a lump of

earth, a stone, or stakes of different heights to represent the two sexes.

Having spoken of the deities revered by these primitive races and of the worship accorded to them, we proceed to describe the persons, whenever there are any such, whose special duty it is to perform that service. It may be said that, with few or no exceptions, all the tribes employ priests regularly or occasionally. When a tribe has no priests of its own, it borrows them from another tribe. Moreover, the office is usually not hereditary, but may be taken up or laid down at pleasure. In this respect the priesthood among the aboriginal population of India stands in marked contrast with that of the Hindus. The Singphos have no regular priests of their own, though members of the tribe sometimes act as diviners. The Buddhist priests of their neighbours, the Khamtis, are greatly esteemed by them. Among the Garos the priest leads the same kind of life as the laity, and the only preparation needed by him before assuming the sacred office seems to be an ability to repeat the usual incantations. The Oraons, when in want of a priest, discover the proper individual by divination. Taking a winnowing sieve in their hands, they march about the village, and are involuntarily led away by movements of the sieve to the right house. Among the Paharias, persons desiring to enter the priesthood are required to retire for some days to the jungle, and commune in solitude with the deity. Before they are confirmed in their office they are expected to perform some marvellous act, as evidence of having acquired superhuman power. They wear their hair uncut while acting as priests. The same tribe have also priestesses as well as priests. Some tribes, that have in other respects adopted the religion of the Hindus, employ the priests of neighbouring unconverted tribes to propitiate local deities. The distinction between priests and laity among most tribes is so slight that unconsecrated persons not unfrequently perform the offices of religion. The Juangs, who are among the lowest of all the tribes described, employ an old man as priest. Among the Kharrias the head of the family presides at offerings to the sun-god in behalf of the household, but a priest is employed to act for the community. The Kols allow certain elders or the heads of families to perform the service. Among the Santals the head of the family offers the ancestral sacrifices, but other services are performed by village priests, who fit themselves for the purpose by prayer, fasting, and silent contemplation of some god until they are possessed by him. Among the Khonds a regular priest always officiated at the festivals in honour of the

earth-goddess, but it appears that on ordinary occasions any one who chose to do so could assume the priestly functions, his reputation being dependent upon his skill as a diviner. We are told by Hodgson that among the Bodos and Dhimals the priests do not form an hereditary class, though it is not uncommon for the son to take up the business of his father; but that the elders of the people, heads of families or clans, frequently act as priests. We have already seen that among the Todas the manager of religious affairs is at once priest and god. His novitiate is passed by retiring to the jungle, and remaining there alone and without clothing for eight days, during which time he performs certain purificatory rites. On the eighth day he returns and enters upon the discharge of his duties.

Among the hill tribes generally the principal duties of a priest are to cure sickness, to ascertain coming events by divination, and to preside over the public offerings. The theory of the Nagas that sickness is caused by a demon, who takes this way to gratify a personal spite against some mortal, is shared by other tribes. This being the diagnosis, the only rational course to pursue is to call in the priest. Among the Kukis, when this personage arrives, he first determines from the symptoms which one of the gods is offended. He then roasts a fowl, and eats it on the spot where the sick man was first seized with his malady. After throwing the fragments away, as an offering to the demon, he goes home. Should the gravity of the case demand the sacrifice of a larger animal, the priest collects his friends and shares the feast with them. In case the first application of the remedy does not prove effectual, it has to be repeated until the man dies or his resources fail. Among the Garos, the priest, with the patient lying beside him, takes his seat near a bamboo altar, around which an assistant leads the animal to be sacrificed. From time to time it is taken away and washed, and then brought back and fed with salt and caressed. Its head is then severed with a single blow, and its blood smeared upon the altar. A somewhat more economical plan is in vogue among the Bodos. The exorcist places before him on the ground thirteen leaves, with a few grains of rice upon each. Over these leaves, which represent the names of divinities, he causes a pendulum suspended from his thumb to vibrate, and the leaf towards which it moves indicates the god to be propitiated. An appropriate victim is then promised him, but only on condition that the patient recovers. The same use of a pendulum has been observed among the Paharias. Sometimes the sickness is due to the spell of a witch, and then the following method is

employed by the Kols for the detection of the offender. A large cone-shaped wooden vessel is placed apex downward upon the ground, and on this is laid a flat stone. A boy is made to balance himself upon the stone, while the names of all the people in the vicinity are slowly repeated. With the mention of each name a few grains of rice are thrown at the boy; and when the right name is uttered the stone moves, and he falls off. The foretelling of future events by the observation of omens is one of the most important functions of the priest; although the interpretation of these is among some tribes the duty of a special diviner, who is another person than the priest. Among the Singphos the diviner holds over the fire joints of a large sort of grass until they explode, and then examines the position of the minute fibres thrown out beside the fracture. The Abors scrutinise the entrails of birds, but get the best results from pig's liver. They informed Colonel Dalton "that the words and faces of men were ever fallacious, but that pig's liver never deceived them." The Khasias seek omens from the contents of eggs. The western Naga tribes put the village under *tabu*, when the omens are to be observed; and no one is permitted to enter or leave it, or to engage in labour for two days. This especially occurs when they are about to cut down the jungle for their rude agriculture. At this time all fire is extinguished, and new fire is produced by the friction of two sticks. When there is a birth or death in a family the house is put under *tabu* for five days, and no one but the inmates can enter or leave it. The same practice of *tabu* is observed among the Mishmis, who, when misfortune visits a house, thus isolate it by placing the sprig of a certain plant at the door. A common mode of divination among the Nagas is to cut slices from a reed, and observe how these fall. They also kill a fowl, and notice how the legs lie. If the right leg lies over the left, the omen is favourable; but, if the reverse is the case, it is unlucky. Among some of the tribes the diviners are called *ojhas*, a Bengali word derived from *ojh*, "entrail." Among the Mundas a common way to ascertain which of the gods ought to be propitiated is to drop oil into water, at the same time naming a deity. If the globule remains whole, the right name has been pronounced, but, if it divides, the experiment must be repeated. A method sometimes employed by the Oraons to show whether the god is pleased with a proposed sacrifice is to make a mud image of him, and to sprinkle upon it a few grains of rice; then the fowls designed for the sacrifice are placed before it, and if they peck at the rice the omen is favourable. Belief in witchcraft is not uncommon.

The Kacharis regard sickness as frequently due to this cause; and, having discovered by divination the old woman exercising the spell, they flog her until she confesses, and then drive her from the village. This belief in witches, and wizards as well, appears to be most prevalent among the Kol tribes of Central India. Sometimes a magician pretends to have discovered that the evil influence proceeds from a rival in another village. The latter is then summoned and beaten until he finds it best to admit his fault. If he is unable to undo the evil caused by his spell, the beating continues, sometimes with fatal results. If the Gonds have reason to think that death has been caused by witchcraft, the funeral rites are postponed until the sorcerer has been pointed out. This is accomplished by the aid of the corpse. They first make a solemn appeal to it, and then taking it up carry it about the village. It will lead the bearers to the house of the guilty person, and if this is done three times it is regarded as conclusive evidence, and summary vengeance is inflicted upon him. It is easy to see that this is a convenient way to get rid of an obnoxious individual. Witches are supposed to have demon lovers, with whom they dance and sing at night in the forest. The Khonds believe that some women can transform themselves into tigers; and occasionally individuals endeavour to spread this impression regarding themselves in order to extort presents from their neighbours as the price of immunity from their ravages. Trial by ordeal is also resorted to by the Gonds for the conviction of a person suspected of witchcraft; but it is so arranged as to make escape impossible in any case. The woman is securely bound and thrown into deep water. If she swims, she is guilty; if she sinks, she is drowned. Or the witch is beaten with castor-oil rods; if she feels pain, it is proof of guilt. Women, and those not always the old and ugly, are more often suspected of the black art than men are.

We have reserved to this place an important feature of the religion of the aboriginal tribes of India, namely, their views concerning a future life and the customs connected therewith. While it is true that savage races generally have held to the survival of the soul after death, their notions regarding the character of the future life and its bearings upon the present existence have greatly varied. Among the lowest tribes the future life has been commonly imagined to be a continuation of the present life, though under conditions more favourable for physical enjoyment. In a more advanced stage of society, where the moral powers have reached a fuller development, men have looked upon that life as an opportunity to balance the accounts of this life, to render to every man according to

that he hath done. We therefore proceed to inquire with much interest what these tribes have to say concerning the world of the dead. The Chulikata Mishmis deposit in the grave with the dead his weapons, clothes, and ornaments, and some food ; but they affirm that this is done only as a mark of affection, and not with the idea that he can make any use of them. They declare that there is no future life, but that they and the gods whom they worship have but a temporary existence. The Juangs also are said to have no expectation of survival after death. The Mundas have a vague notion that the ghosts of the dead hover about, and they sometimes set apart food for them in the house. The same vagueness of conception is characteristic of the Oraons. They say that those who have been killed by tigers are transformed into that animal ; also that the ghosts of women who have died in childbirth, hover about graves, clad in white garments, and having lovely faces, but hideous backs and inverted feet. But, as a general rule, the tribes not only believe in a future life, but are able to tell something more definite of its nature. The Abors think that the character of the future state is determined in some degree by present conduct ; but this advanced conception is perhaps due to the Hindus, whose god of the dead they have borrowed. Their neighbours the Miris share the same views, and bestow unusual care upon the bodies of the dead. They are completely dressed, and supplied with cooking vessels and every appliance for a journey, and are placed in graves lined with strong timbers to protect them from the pressure of the earth. The eastern Naga tribes believe that the future life is like the present one, or, on the whole, rather more to be desired. Their belief in immortality is shown by the care with which they place in the grave the belongings of the dead. The residence of the disembodied spirit is not necessarily a distant region. The Nagas suppose that the soul hovers about its former abode, and considerable anxiety is felt for its convenience. Captain Butler mentions an instance where a native was buried midway between two villages in which he had resided at different times in order that his soul might most conveniently visit either. Some tribes place the body in a wooden hut, in the wall of which an aperture is made for the ghost to pass to and fro. When a Garo dies, his soul goes to Chikmang, one of the highest mountain peaks in their country. Food is provided for the journey, and dogs are slaughtered to track out the path for them. Formerly slaves were killed at the grave to attend persons of note, but the custom was stopped by order of Government. A choice offering on such occasions,

and probably for the same purpose, used to be heads of Bengalis from the plains. An incident observed by Colonel Dalton shows that the Garos believe not only in the survival after death of the souls of men and animals, but in that of inanimate objects. Witnessing the funeral of a young girl, the friends were observed to break all the earthen vessels placed on the grave. In answer to inquiry he was told that only in this way could they be used by the girl, that for her the pieces would reunite. In other words, the vessels must die like men, but their ghosts survive. The Khasias, while burning the corpse, make offerings to the ghost that it may be kindly disposed to them hereafter, but take little thought about the future life. The Kukis imagine a paradise in the north, where the good will enjoy abundance without labour, where the enemies one has slain will attend him as slaves, and the cattle he has killed in acts of hospitality will be restored to him. The wicked will be subjected to the worst tortures the imagination can devise. The Toda after death goes to a home in the west, where he is joined by the ghosts of his buffaloes, and goes on living just as before. It does not appear that he ever returns to trouble his relations.

According to what seems to be the prevailing view, however, the spirit acquires after death divine powers to some degree, and hovers about its former abode in a restless and uncomfortable state. It has wants much like those experienced in the body, and if these are not attended to it becomes malicious, and the cause of innumerable vexations to its kindred and neighbours. The Pani-Koch offer some of the first-fruits of the harvest to the ancestral spirits, clapping the hands to attract their notice. The priests of the Kirantis celebrate two festivals yearly to ancestors. Among the Kharwars, each family sacrifices annually a wether goat to the dead. The Hos celebrate a festival to the shades, after the sowing of the first rice-crop, in order that they may favour the sprouting of the grain. It is also the custom with them to prepare for a visit from the ghost of the deceased on the evening when the body is consumed. Some boiled rice is set apart in the house, and ashes are sprinkled on the floor, by which its footsteps may be detected. The relatives then go outside, and, walking around the funeral pile, invoke the spirit. If, on returning to the house, the ashes are found disturbed, they are filled with terror at the supposed presence of the ghost. The Santals have very little to say about a future life, though offerings are made to ancestors at the close of the late harvest. The Korwas, of Sirgūja, told Colonel Dalton that they worshipped no gods, but that the head of

each household made offerings to the dead. The Gonds say that one of their chiefs was, in early life, devoured by a tiger, and that he afterwards appeared to his friends, telling them that, if worship were paid to him, he would protect them from that animal. They acted upon the suggestion, and he was duly installed among their gods. The Bhuiyas, of Keonjbur, after the funeral rites are concluded, place a vessel, filled with rice and flour, upon the grave. This has the effect to recall the ghost, for, after a time, the print of a fowl's foot will be plainly visible at the bottom of the vessel.

It would be interesting to know how the speculations of these rude tribes regarding the origin of the universe and of the human race compare with those of more civilised peoples; but we have little information on this point. It does not seem to be a subject upon which they have spent much thought. It is enough for them to know that they and the world are, without taking the trouble to inquire how they came to be. A few exceptions are worth noting. The legend of the Singphos, to which we have already alluded, is that "they were originally created and established on a plateau called 'Mājai-Singra-Bhum,' situated at the distance of two months' journey from Sadiya, washed by a river flowing in a southerly direction to the Irrawaddy. During their sojourn there they were immortal, and held celestial intercourse with the planets and all heavenly intelligences, following the pure worship of the Supreme Being." They, however, fell by bathing in forbidden water, and, descending to the earth, became mortal, and adopted the debased worship of their neighbours. The Abors get back as far as the first mother of the race, who had two sons, the elder of whom was skilled in hunting and the younger in handicraft. Like Rebecca, she loved the younger son better than the elder, and migrated with him to the west, taking along all the products of his skill. Before forsaking her elder son, she gave him a stock of blue and white beads, and taught him how to make the *dao*, a sort of hill-knife, and musical instruments from the gourd. The Abors are the descendants of the elder brother, while the younger brother became the progenitor of the English and other western nations. The Garos, who do not seem lacking in imagination, explain the origin of the world as follows:—The germ of creation was a self-begotten egg. From this sprang the goddess Nushtoo, who sat, for a time, on a water-lily; but, finding her quarters too restricted, she sent to Hiranman, the god of the lower world, for some earth, upon which she successively fixed the different objects of nature. First, rivers proceeded from her,

then a reptile of the crocodile type, afterwards grasses and reeds, an elk, fishes, trees, buffaloes, a priest, and last of all a woman.

The Hos relate that their god Sing Bonga, who was self-created, made the earth and furnished it with vegetation and animals,—first the domestic and then the wild ones. He then created a boy and a girl, and taught them how to make rice-beer. This produced amatory desires, and they became the parents of twelve boys and twelve girls. For these children Sing Bonga made a feast, providing all manner of food. The guests were told to pair off, and taking the kind of food they preferred, to go away and shift for themselves. They did so, and their choices can still be discerned in the various modes of life among mankind. The Santals say that a wild goose came over the great ocean, and laid two eggs, from which the first parents of their tribe were hatched.

We have more than once intimated that it is impossible in all cases to draw the line sharply between what is primitive in the religious beliefs and usages of these tribes and what has been borrowed in whole or in part from Brahmanic or Buddhist sources,—chiefly the former. It is not uncommon to observe Hinduism and Paganism struggling for supremacy in the same tribe and the same village, now the one and now the other claiming the larger share of interest. Hinduism, with its extraordinary power of assimilating alien systems, has usually been content to insist upon some general and public observance of caste rules, while not interfering with the private observance of the old religion; or it has given to the ancient superstitions some new explanation or purpose, and fitted them into its own system. So it would be hard to find an aboriginal tribe so completely transformed into Hindus in language, dress, and manner of life, that its non-Aryan origin may not be detected by its private religious usages, as well as by its physical traits. Facts illustrative of this have already been cited. We have spoken chiefly of the influence of Hinduism upon the pagan religion, and it cannot be doubted that this will ultimately result in the effacement of the latter, unless, as is to be devoutly hoped, this work shall be done by Christianity; but the counter-influence of the older faith upon Hinduism is not less certain, if less easily traced, and would form a most interesting theme for inquiry; but we cannot enter upon it here.

In conclusion, we trust that this necessarily imperfect sketch of the religion of the aboriginal tribes of India may at least serve to attract those who are interested in the history of the religious development of the race to an important

source of evidence. If Hinduism, whose many-sidedness is well symbolised by the many-faced images of its gods, shall furnish greater attractions to the majority of students, still it must not be forgotten that the simple beliefs and rites that we have sketched belong to a much earlier stage of religious growth, and may, if attentively studied, throw much welcome light on the genius of all religion.

THE CHAIRMAN (Mr. W. N. West).—All will desire me to tender the thanks of the meeting to Professor Avery for his very able paper, and also to Mr. H. Cadman Jones for the admirable way in which he has read it. I will now invite those present to take part in the discussion.

Maj.-General F. T. HAIG, R.E.—As I happen to have had an extensive acquaintance with one of the aboriginal tribes of India, I have been asked to come here and offer a few remarks on this paper. The subject is certainly one of great interest; but it seems to me that there are two points of view from which we may approach it, and that it is important we should, in the first place, determine which it is to be, because upon that will necessarily depend, to a great extent, the conclusions we may arrive at in reference to the general subject of the so-called “science of religion,” which is more or less raised by the author of the paper. I do not wish to enter at large into that subject, but will offer a few remarks, which I think will enable me to put my own position clearly before you, and in doing so state what I have myself seen of the religion of these aborigines. Such investigations may follow two opposite courses. We may either dismiss altogether the question as to whether there is such a thing as Divine revelation in the world, and confine our inquiries simply to the investigation of the origin and development of the different religions of the world, Christianity included. This, perhaps, might be called the strictly scientific method, though I do not think it is so; but it would at least yield the advantage that we should be able to pursue the inquiry with no more of that sentiment which appears to be deprecated in the paper than we should feel if we were engaged in investigating the claims of a number of old bones to having belonged to some extinct Saurian; but at the same time, if we pursue this method, the only standard by which we can judge of the relative value of the different religions must be such notions as we can evolve from our own consciousness, or those derived from natural theology. On the other hand, if we have, from careful investigation of the credentials of Christianity, arrived at a full conviction that it is a Divine revelation, two or three very important consequences follow. First of all, Christianity must be set on one side as not coming within the scope of our inquiry; because its origin, development, and character are already authoritatively laid down in its sacred books. In the next place, we shall have a much higher and an authoritative standard to which to bring all the different religions we may investigate; and, lastly, there is this to notice, namely, that the whole subject becomes invested with deep and intense interest—ininitely

greater than if it were approached from any other point of view ; because, if we accept Christianity—as I do—as a revelation from God, we have, at least, in all these aboriginal tribes objects of the Divine regard and benevolence, rather let me say of Divine love, in a degree which it is not possible for any created mind to conceive. This, I say, must invest the whole question with intense interest. For myself, I fully accept the Divine origin of Christianity, and looking on its records as inspired, the question of the religious condition of these aboriginal races has a very special interest for me, which has, doubtless, been the more developed by a residence of some years among one of them. The tribe to which I refer is a branch of the great Gond family, who inhabit a wide district stretching down to the river Godavery. They extend, indeed, over a portion of India which is about as large as one-half of Ireland. In reference to them, there is one point in the paper which here strikes me as worthy of notice, namely, the remark that “there is much in other systems of belief which deserves our admiration, and not a little that has served the Divine purpose in educating the world up to the understanding of a purer revelation.” * I should be inclined to say, speaking from my knowledge of these Gonds and their religious beliefs, that this remark, as applied to the question as between the religion of the aborigines and that of the Hindoos, does not hold good. I think indeed that precisely the opposite is the case. I believe it is found that, exactly in proportion as Hindooism has become more and more highly developed, so has it departed further and further from the truth, as judged by the Christian standard, which is the standard by which I elect to judge. We also find that the difficulty met with in presenting Christianity to the Hindoos, and their slowness to adopt it, is much greater than among the aboriginal tribes. The reason for this is not one that we need go far to seek, because among the aboriginal tribes the truths they hold in a very remarkable degree, although in an exaggerated or corrupted form, need only to be purified from the accretions of error that have gradually grown upon them in the course of centuries to be fitted into a place in the Christian system. A question is raised in the paper as to whether these aboriginal tribes believe in one supreme God, as the Creator and Ruler of all things. The tribe to which I refer certainly do, although in an exceedingly vague and uncertain way. They retain the belief, but it has no effect upon their lives, and the moment the truth of the unity of the Divine Being—the one God over all—is presented to them as a revealed certainty, it is at once accepted, and is simply regarded as a confirmation of the belief which has been long and dimly held. And so it is with other portions of their belief, as regards, for instance, the existence of evil spirits. They need to be told that those spirits are not the spirits of departed persons—their ancestors and relatives ; the truth requires to be guarded in that and in other ways, but, nevertheless, there is a considerable element of truth in

* See note, page 95.

their ideas. And so, in regard to their belief in a future state, and in the necessity for sacrifice—although the idea of sacrifice which they entertain is that they have to propitiate a bloodthirsty being ; still, the notion is one that tends to the confirmation of the great leading truth, set forth in the one great sacrifice of the Cross. We find, therefore, in these aboriginal tribes a larger degree of preparation for the truths of Christianity than among the Hindoos. In putting Christianity before the Hindoos you have to encounter and to overthrow their whole system of religious belief, which is utterly, hopelessly, and fundamentally wrong. Therefore, without going further than the limits over which my own experience has extended, so far from thinking that the more elaborate religions to which reference has been made have educated the people up to the “understanding of a purer revelation,” I hold that precisely the contrary is the fact. There are one or two other points I may be allowed to mention. I think this paper is the best I have ever read or heard on this subject. I am especially struck with the discrimination exercised by the writer—a discrimination which shows itself in the selection of the facts which are laid before us, and especially in the rejection of so very much that we often find in papers and utterances on this subject. I may say, in regard to the general question of the aborigines of India, that in my opinion much of what is in this paper, and which has been very carefully sifted from a larger amount of information, must be received with a good deal of caution ; because we are apt to forget to what extent Hindoo ideas, and even those of the Mohammedans, have, in the course of centuries, filtered through the whole of Indian society. The aboriginal tribes have been secluded, owing to their inhabiting great forest tracts which have been like islands in the midst of the great sea of Hindooism for centuries, but not so completely so as to be absolutely beyond the reach of other religious influences. Traders have been in the habit of penetrating the wild tracts to which those tribes have been confined, for the purpose of selling cloths and carrying things for barter ; and the people themselves come down to the more settled districts for salt, which they greatly covet, and for which they have to pay a high price. It is consequently very hard to distinguish how much the religious beliefs of these people are to be regarded as original, or to what extent they may have been modified by Hindooism or Mohammedanism. When I speak of Mohammedanism, I speak of a religion which holds the unity of God, and which has been in India for centuries. Then, there is another point with regard to the information furnished to us with reference to the aboriginal tribes, and that is that we ought to bear in mind the extreme timidity of the people, who are exceedingly superstitious, and whose lives are spent in a constant state of fear. Such information as we have had placed before us this evening is mostly gathered by officials—that is to say, a man like Col. Dalton, wishing for information in regard to the religions of the people under his government, sends a circular to his subordinates, requesting them to supply him with the requisite data. Upon this, questions have to be put to some of the native tribes, and these must naturally be leading questions. The result is that these poor

people often intentionally tell falsehoods, because they fear to divulge the truth. Knowing this tendency, there is, of course, a certain amount of suspicion cast upon the information which comes to us, and therefore we must receive it with a good deal of reserve, and a feeling that we can hardly draw any very reliable conclusion from it. These tribes retain the belief, although in an exceedingly dim manner, in a Supreme God. The gods they really worship and fear—for their religion is wholly one of intense fear—are for the most part those minor and malignant deities who are the spirits of departed persons. Their imagination fills the forests and villages with these spirits, and they spend their lives in terror of them. This is one of the reasons which account for the extremely migratory habits of these people, who can hardly be induced to remain more than two or three years at the same spot. This is partly due to their peculiar method of cultivation; they cut down the forest, and burn it, in order to manure the land with the ashes, which give them rich crops for two or three years; and, when they have thus used up all the land around a village, they are naturally disposed to move somewhere else. Another and a frequent cause of the breaking up of their settlements is, however, the terror inspired by the spirits of the departed. Perhaps one or two deaths have occurred rather suddenly—perhaps there may have been three or four, more than they expected. These deaths they attribute to one of the spirits, and therefore abandon the village and move somewhere else; and this constitutes one of the difficulties we have in the civilisation of these tribes. It is certainly a great obstacle in the way of their christianisation, and is so found to be by those who labour among them with a view to their evangelisation. The paper very accurately describes some of the customs of these people. They practise divination and witchcraft, and hold to the custom of using a corpse, when it is being conveyed to the place of burial or burning, to indicate the house of the person to whose means the death is attributable. This custom has always prevailed among them. The corpse is taken up by four bearers, who go staggeringly and uncertainly along through the village; and, if one sees a house belonging to a man to whom he wishes to do an ill turn, he pushes in that direction, while the others, feeling the pressure, also move towards the same point until they come up against the house of the person so singled out, and he is thereupon believed to have been the person causing the death. The punishments meted out in such cases are, however, far more serious than those stated in this paper. Even impaling was not at all uncommon before the advent of British power. I may here say, in reference to a remark in this paper, that human sacrifices were certainly at one time common among all these tribes. In the district to which I have referred they carried on the practice down to a recent period, and it is only within the last two or three years I have heard of more than one instance occurring within a few miles of a government civil station, in which there was quite a panic among the people, in consequence of a report that some one or other would be carried off for sacrifice. This, at any rate, shows that there is still an impression that

human sacrifice is practised, even down to the present day. There are some other points I should have liked to have mentioned, but I will not go into them now, as I fear I have already occupied too much of your time. (Applause.)

Mr. HORMUZD RASSAM.—I am somewhat reluctant to make any remark on a paper in the author's absence ; nevertheless, I feel bound to take notice of two allusions he has made and to which I take great exception. I believe the majority of those present will agree with me in thinking it is very heretical to the Christian belief which, I presume, is held by all of us, to hear what the writer asserts with regard to heathenism :—He says, "There has been a time when the Christian Church viewed everything called religion outside its own fold much as the Greeks looked at the world beyond the confines of their peninsula, and lumped together alien beliefs of every variety and merit under the general title of heathenism." I should be sorry to think that the Christians did not believe this of the other religions, barring Judaism and Mohammedanism ; these two faiths, of course, could not be characterised as heathenism, because both Jews and Mohammedans believe in the true God. The writer goes on to say : "But, happily, a more appreciative spirit now prevails, and we are coming to see that there is much in other systems of belief which deserves our admiration, and not a little that has served the Divine purpose in educating the world up to the understanding of a purer revelation." Now, I am pained to see the author make such a remark, because it makes the belief in revealed religion quite inconsistent.* Then, further on, the same writer says :—"Whether these are vanishing traces of a primitive revelation, or the result of their own reflections, or have been borrowed from the religion, particularly the Hari-worship, of the Hindoos, we will not here inquire. It is, at any rate, certain that the contemplation of their highest god has little effect in regulating conduct." We, who believe in Revelation, know very well that there was at one time throughout the world a universal belief in one God Almighty ; that through the wickedness of man's nature he was alienated from his Creator, and that consequently God chose the Jews as His people in preference to any other, because they continued to worship Him like their forefathers, Abraham and his immediate progeny. It is the same with regard to Christianity, and we must believe that, if people will only take the Bible and examine it in relation to the other religions, they will find that those other beliefs are nothing more than corruptions of Revealed Religion. If we take Mohammedanism as it exists at present, we shall find that it has adopted some truths of the Old and New Testaments, although we cannot, of course, admit that the Koran is inspired ; and so, with regard to other religions, according to the received theory, they are nothing but corrupt belief in God. We need not go further than the present century to see that among all the denominations of religious belief, whether Jew, Mohammedan, or Christian, this has been the case ; and I could mention many instances of particular superstitions in which, although

* See note, page 95.

the people are believers in Revelation, you would not think them one whit better than the Hindoos. So we may trace the whole system of Hindooism and Buddhism to revealed religion; but as to what time they became corrupted, and at what time they maintained a belief in God Almighty, it is, of course, utterly impossible to tell without a thorough and exhaustive examination of the whole question.

Mr. W. GRIFFITH, Barrister-at-Law.—In one part of the paper the author speaks of a practice which prevailed in former times of “lumping together alien beliefs of every variety and merit under the general title of heathenism.” Some who have spoken this evening have come to the conclusion that, while blaming what may have been an improper practice, the writer has intended to uphold the advantages of the system of education which exists among the aboriginal tribes of whom he speaks; but, in my opinion, this is hardly a necessary consequence of the language he employs. What he says is, that “there is much in other systems of belief which deserves our admiration, and not a little that has served the Divine purpose in educating the world up to the understanding of a purer revelation”; but he does not say that these characteristics exist in the systems which prevail among the aboriginal tribes to whom he refers. For my own part, I would rather have put this interpretation on his meaning—that there has been much to admire in other systems such, for example, as those of Greece and Rome; something to admire in the system of Confucius which obtains in China at the present day; something to admire in the system of Mohanmedanism, which is opposed to idolatry and teaches the existence of but one true God; and something also to admire in the system of asceticism and charity which prevails among certain Hindoos. I think we may put this interpretation on the meaning of the writer without any breach of fairness, and that in common charity we ought, in his absence, to say the best we can of the sentiments he has advanced. It is an argument frequently used by writers, that the very defects exhibited by even the admirable parts of other systems have shown the want of a revelation. I would rather interpret the concluding portion of the sentence in which the writer says these things have “served the divine purpose in educating the world up to the understanding of a purer revelation,” as meaning that these very things have shown that a purer religion was wanted. (Hear, hear.) They have served as proof that the unassisted power of man could not devise what was perfect; that revelation was needed in order that we might obtain that pure, and perfect, and settled system of faith and practice called Christianity, which man by his own unaided powers would never be able to develope. I repeat, that I think we might in fairness put this construction on the author's sentiments, which have been to some extent misconstrued in consequence of a vagueness in the language employed. To pass, however, from these controversial points, I think we may say that the paper presented to us is full of interesting information and one which may prove of great utility. The word “science” may not be altogether applicable to it, as was remarked by the first speaker;

but the word "science" is a somewhat vague one. I do not think it an appropriate use of the word to apply it to large classifications of facts. The facts must be collected independently; but there is no reason why they should not be classified, nor why different collections should not be made at the same time. Whether it is useful to do this is another question; but I think that no one who has considered the utility of a great number of collections can doubt the advantages derivable from the adoption of systematic method, and so forming what some are pleased to name the inductive sciences. There are in India at least fifty districts where different languages are spoken, many of them large districts, in which the face of a white man is never seen; but, if we have regard to the importance of that Empire to ourselves and the duties imposed on us as its rulers, surely everything connected with the classification of the people, their habits, customs, and religious beliefs, must be a matter of deep concern to us. Undoubtedly the population contains a large number of Mohammedans and Hindoos; but, seeing the vast proportion of native tribes, in that territory, over whom we have control, we should be only too thankful to have information such as is contained in this paper, so that it may be turned to its appropriate use. It will enable our missionaries to adapt the means at their command to the wants of the people; it will also enable the Government to put a stop to immoral practices which they would otherwise know nothing of: it will, probably, be the means of attracting a large number of travellers to the districts spoken of and of developing a large amount of trade, although trade and travelling are matters of inferior importance when compared with the moral and religious well-being of the people. Before we can hope to benefit the large mass of the population by Christianity or civilisation, we must first inform ourselves of the peculiarities of the creeds which at present exist among them. (Hear, hear.) I think the author of the paper has produced a very valuable contribution to our previous knowledge, and I hope it may result in benefit to the Indian races.

Mr. RASSAM.—I am afraid that the gentleman who has just spoken quite misunderstood me. I spoke as a Christian, and am sure very few Christians would disagree with me in regard to the comparison made between us as Christians and the Greeks who represented the heathens outside Christianity. There can be really no comparison. Even if we appealed to the Mohammedans' theory, they would tell us that those who do not believe in God Almighty, whom we call Jehovah, are heathens. God has given the world revelation, and if we refer to history we shall find that, in the infancy of the Christian Church and in the fourteenth century, hundreds of missionaries went from Mesopotamia and preached to the Chinese, the Tartars, and the people of India. I do not mean to say they were all converted, but thousands were.

Mr. GRIFFITH.—I had no wish to depreciate Christianity or compare it with the heathen systems. The God of the Christians, the Father which is in heaven, is a Spirit whose will is just, whose wisdom, power, and goodness are infinite and consistent. It were indeed monstrous to compare this Heavenly Father with stocks, and stones, and graven images.

But I said I thought it hardly fair to say that the author of the paper had done so. As to the historic question, I am aware that there were Christian missionaries at the time the last speaker has mentioned. St. Thomas the Apostle is supposed by some to have introduced Christianity into India.

Mr. CALEB (an East Indian visitor).—I think there is much that is profitable in this paper. We read of the various beliefs as to the life hereafter and the sacrifices that are made by the different Indian tribes. Does it not thus help us to understand more than hitherto the value of the One great sacrifice that was made on the cross for us, and does it not also help us more clearly to understand the conditions of an eternal life hereafter?

The meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

By the Rev. R. COLLINS, M.A., late Principal of Cottayam College.

Professor Avery's paper is most valuable, as affording us important facts, which must be taken into consideration in drawing conclusions as to the origin of the various religious ceremonies and beliefs of mankind. Professor Avery himself, however, does not here draw conclusions: and yet for this alone are such facts of value. We are presented with disjointed parts of a puzzle, and we instinctively try to put them together.

These religious rites, beliefs, and traditions of the more uncivilised, and no doubt topically the more ancient, tribes of India seem to me to be chiefly interesting when taken in connection with those of other nations, Hindoos, Greeks, Romans, Assyrians, Accadians, &c. If we find one thought, or principle, running through all, we must give to that one thought, or principle, the same or a similar origin. Can this similar origin be due to the similar idiosyncrasies of different tribes? There are, in fact, several principal ideas and customs common to the religions of these Indian tribes, as described by Professor Avery, and other, whether more or less civilised, peoples of all ages; there are, to take only three, the priest, the sacrifice, and the propitiation. The interest in the study of Comparative Religion centres round the question of the origin of these. Mr. Herbert Spencer traces the origin of the religious sentiment to "ghost worship," Mr. Frederic Harrison to the worship of "natural objects": and both would, I believe, make all religious observances the outgrowth purely of human nature. The value of Professor Avery's paper to me is, that it seems to help the evidence, that all such religious observances and beliefs are relics, it may be more or less degraded, of a Divine revelation given to the early families of mankind, similar to that given to Moses on the Mount. It is impossible, I think, to imagine why primitive man should propitiate "ghosts," dreaded though they might be, or "natural objects" endowed by their heated imaginations with ghost-like influences, by offer-

ings of slain animals, and, as among the Garos, and many other tribes beside those mentioned by Professor Avery, by pouring the blood upon an altar; or why they should invent a priesthood. Men surely do not thus, and never did, attempt to propitiate each other. The belief in, and fear of, ghosts, the adoration of mysterious powers, and the use of symbolism in religion, we can easily understand, because they come under our own experience: superstitious dread is nothing strange to us, who perhaps have friends who would not on any account sit down thirteen at a table, or encourage a marriage on a Friday; but we cannot trace the principle of propitiation *through the shedding of blood* to anything that we can grasp in human nature. On the other hand, if the Almighty and All-wise instructed the fathers of mankind to sanctify a meal (perhaps every meal) to the remembrance of Himself, the Giver of all, and to make the very killing of the food-animal (as was certainly done under the Mosaic dispensation) a picture of the atonement of Christ, the Life of the world, upon the cross, which is the central object of all Divine teaching, we can well understand the method of priest and sacrifice, and the sentiment of propitiation; and we can understand their being perpetuated, even amongst the most uncivilised and illiterate races. *Methods* in religion are most likely to be permanent. The character of the *sentiment* expressed is more likely to be subject to change. The sentiment of propitiation itself in the abstract in connection with sacrifice is one likely to remain; but the sentiment as to the object to be propitiated is likely to change. The object is unseen and unknown, except by revelation. Man is superstitious by nature; indeed, I suppose it may fairly be taken as an actual "law of nature" that he is so. He is also prone to forget God, as we see in all our experience. We are not astonished, therefore, at man worshipping either "ghosts" or "natural objects," when we see man in our own day transferring the worship of Jehovah to the "ghosts" of "canonized" men and women. But can we look upon ghost-dread, or the adoration of the mysterious in natural objects, as the origin of the universal (and Prof. Avery's examples help us to believe that it has been universal) method of priest, sacrifice, and offerings in religion? It must be admitted that honestly we cannot do so; we must find an independent origin for that; an origin independent of humanity; an origin which we must attribute, as historically we ought to attribute it, to a revelation from God.

I would venture one further word: is there not a fallacy in taking for granted, that, because the men of a race are to-day illiterate, and, it may be, descended from the aborigines, or at least very early inhabitants, of a country, therefore their present religious rights and beliefs represent those of all primeval men, or even of their own ancestors? The state of a thing to-day is scarcely a sure indication of what it, or something allied to it, was a thousand or two thousand years ago. I refer to the last sentence in Prof. Avery's paper, "still it must not be forgotten that the simple beliefs and rites that we have sketched belong to a much earlier stage of religious growth" (that is, than Hindooism). There is nothing to show, as we regard

these things merely to-day, whether these beliefs and rites are in a state of "growth" to something higher in the future, or a state of decay from something higher in the past. The latter seems to me to be more likely to be the case, agreeing, as it does, with all we know of the propensities of human nature, and with the testimony of history up to the time not only of Noah, but of Adam himself.

I am, therefore, thankful to Prof. Avery for the very interesting examples he has given us of the present state of religious observances among the aboriginal tribes of India, because the most characteristic of them seem to me to be independent vestiges, like the rites of the Hindoos and other nations, of a Divine revelation as to worship and belief, given in the far past by Jehovah Himself. The traditions, as amongst the Singphos, the Abors, Miris, Kukis, and others, as to a Supreme God and Father of men, as well as other parts of the beliefs of these (why should we prejudge their religious history by calling them "primitive," when all we really know is that they are at present uncivilised ?) tribes, would add to this conviction ; but I have already written too much.

REMARKS BY THE REV. W. T. STORRS.

I have read the paper through, but there seems little to excite discussion.

As to the Santals, the Sun is their God, as far as they have any idea of God ; Marang Buru (literally, the great mountain) is only the greatest among a large number of demons, *δαίμονια* whom one could scarcely call devils, being evidently in a great measure deified heroes, and the local spirits of groves, streams, &c. ; and this Marang Buru is a created being, and not the Creator, and is always, without any suggestion of ours, equivalent to the devil in the minds of those Santals who have accepted Christianity. They declare plainly that it was Marang Buru who tempted the first pair to sin by offering them intoxicating liquor. They have little huts in the street of each village, where are two small wooden doll-like images of Adam and Eve (as we should call them) stuck into the ground, and to which offerings are made. But the great place of worship is the sacred grove outside each village, where in the darkness their festivals are held with dancing, singing, &c. They have some very pretty festivals and customs, especially the spring festival with its emblematical water sprinklings and offerings of flowers, and the harvest festival with its degrading Saturnalia.

LETTER FROM THE AUTHOR.

In regard to the sentence in my paper which seems to have been received with some hesitation, I have to say by way of explanation, that it seems to me one may discern now and then in the religious systems of the heathen world a more or less clear apprehension of some of the truths of revealed religion,—such as the existence of a Supreme Deity, all-powerful and beneficent, the Creator of the universe ; the idea of sin as a violation of Divine law, and its corollary the need of Divine forgiveness ; the brotherhood of man, &c.

Whether these ideas are a survival from a primitive revelation, are echoes of Christian teaching, or have come to human thought in the following way must be determined by the evidence in each case, and, in the present state of our knowledge, should not be settled too dogmatically. I like to think that the Divine Spirit acting in connection with the "law written in their hearts" has wrought a work in the souls of some devout heathen, thus preserving a witness for God and preparing the way for the prompt reception of the Gospel of His Son. That these glimpses of truth have been clouded with error, and that heathen systems *as a whole* are powerless to raise men to a high moral level I fully recognise. To me Christianity is not one step higher, simply, in an ascending scale of religious development; the best that Paganism has done for the enlightenment of the race is to the smallest blessings derived through Christianity as the feeble flicker of a rushlight compared with the splendour of the noon-day sun.

THE AUTHOR'S REPLY

ON THE DISCUSSION, ETC.

The printed account of the discussion on my recent paper has just reached me, and has greatly interested me. I am grateful for the kind words of appreciation expressed by nearly all the speakers, and the more so as I am fully aware of the difficulty of treating the subject in a wholly satisfactory manner. In regard to the introductory sentences which proved stumbling-blocks to some, I think my former letter and the remarks of Mr. Griffith make all the explanation necessary. Mr. Griffith caught my idea exactly, and illustrated it just as I should have done. I confess that as I read my language again I hardly see why it should have been misconstrued at all. There were several points brought up in the discussion upon which I should be glad to explain my views at length, but it would hardly be worth while to do so at the present time. I will simply add, in reply to the very interesting remarks of General Haig: 1. The paper was designed solely to discover and systematically arrange the *facts* regarding the religious beliefs and practises of these tribes; and not to set forth any theory of their origin, or to compare them with Christianity. I hold that for a long time to come the chief task of the student of religions (of course I am not talking of the missionary) will be to ascertain what the heathen world actually believes and practices; when this shall have been done and the facts are all in hand, it will be time enough to see what we can make of them. 2. I was quite awake to the subtle penetration of Hindu and Mohammedan ideas into the secluded homes of the non-Aryan tribes, and sought to unmask them wherever they occurred. This it is not always easy to do, and requires a broad survey of the whole field. A comparison of the beliefs of tribes widely separated, and differently related to the higher civilization will often help to separate what is indigenous from what is borrowed.

ORDINARY MEETING, FEBRUARY 2, 1885.

THE RIGHT HON. A. S. AYETON, IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed.

ON THE EVOLUTION OF SAVAGES BY DEGRADATION. By the Rev. F. A. ALLEN, M.A.

OUR attention has been so exclusively occupied of late years with the Darwinian theory of Development, that the fact of the existence of numerous cases of Retrogression by *degradation* has been very much cast into the shade, and yet the attentive student of history and ethnology finds almost as much evidence for the one process as for the other.

If the illustrious names of Lamarck, Darwin, Sir John Lubbock, Haeckel, Crawford, Tylor, Tyndall, and Huxley can be cited on the one side, the no less illustrious names of Niebuhr, Dr. Doig (who converted Lord Kaimes to his view), De Maistre, Archbishop Whately, and Professor Max Müller can be claimed for the other.

Without going quite so far as Dr. South, who, in a sermon preached at St. Paul's in 1662,* rhetorically declared that "an Aristotle was but the rubbish of an Adam, and Athens but the rudiments of Paradise," we may be permitted

* See South's *Works*, t. i. 32 (ed. 1842).

to hold that the cases in which mankind has fallen from a comparatively lofty and civilised state into a low and barbarous one are *very numerous indeed*,—far more numerous than Darwinian evolutionists care to admit.

They do indeed admit *theoretically* the possibility of such lapses; but they minimise them as much as possible, as very injurious to their pet hypothesis, and assert that they are very exceptional.

But what if it can be proved almost to demonstration by innumerable examples that, independently of Christianity, and the intervention of highly civilised nations, man's progress has not been *upward* and *onward*, but, to a very great extent, the reverse? What if deterioration should almost seem to be the rule, and elevation almost the exception?

Then, the brilliant French writer, De Maistre, who died only some half-century ago, would seem to be largely correct in his surmise, that the belief, that the history of our race had been a history of progress, was the "*erreur mère*" of the eighteenth century.

On the contrary, he maintained the doctrine that the human race once occupied a position of intellectual and moral greatness now inconceivable, in which men were able to discern general ideas of truth directly by the efforts of their own minds, and so descend *deductively* to the truth upon questions of detail, instead of being obliged, as at present, to follow the *inductive* process.

This state of things he considered to have been destroyed by awful catastrophes—moral, intellectual, and physical—which left vestiges behind in the shape of a variety of traditions spread over the whole face of the earth—traditions which can only be understood on the supposition that they are the relics of some higher system of knowledge, so much do they shock all common notions, although unexpectedly confirmed by the highest and widest experience—such as the traditions of sacrifice and expiation.

He lays the scene of this wonderful diffusion of *à priori* knowledge before the flood, and the theory has this in its favour, that enormous and complicated wickedness almost demands a complex civilisation to produce it.

That catastrophe, he thinks, destroyed it, though Noah and his family preserved and transmitted some vestiges of it, which the priests of Egypt and the old kings learned and evinced in the wonderful genius and skill displayed in the Cyclopean architecture of pre-historic days, and the science of the Chaldean and Egyptian priesthood, which they also wrapped up in their mysterious symbols, and, above all, in

the miracles of skill and thought revealed in the composition of language.*

Certainly, recent discoveries as to the high pitch to which the civilisations of Babylonia and Egypt had attained in very early days tend rather to confirm than to refute this view; and this sets us thinking whether we have not, in many cases, been viewing history through an inverted glass, calling the comparative decrepitude of races their youth, and their real youth old age; whether civilisation, in fact, was not their original condition.

That unrivalled logician, Archbishop Whately, worked out the question of "the Origin of Civilisation" very cleverly and suggestively in a lecture, delivered in 1854 to the Young Men's Christian Association.† "It has been very commonly taken for granted," he says, "not only by writers among the ancient heathen, but by modern authors, that the savage state was the original one, and that mankind, or some portion of mankind, gradually raised themselves from it by the unaided exercise of their own faculties. I say, taken for granted," he adds, "because one does not usually meet with any attempt to establish this by proof, or even any distinct statement of it; but it is *assumed*, as something about which there can be no manner of doubt."‡

But, after reviewing all the testimony of tradition and history, he concludes with pointing out that "all agree in one thing, in representing civilisation as having been introduced (whenever it *has* been introduced) not from *within*, but from *without*,"§—no clear case being adducible of savages, left to *themselves*, having *advanced* one step. "Each one of us Europeans," he adds, "whether Christian, Deist, or Atheist, is actually a portion of a standing monument of a former communication to mankind from some superhuman Being. That man could not have *made* himself, is often appealed to as a proof of the agency of a Divine *Creator*; and that mankind could not, in the first instance, have *civilised* themselves, is a proof of the same kind, and of precisely equal strength, of the agency of a divine *Instructor*. It will have occurred to you, no doubt, that the conclusions we have arrived at agree precisely with what is recorded in the oldest book extant."||

In some very valuable and suggestive articles which

* *Pall Mall Gazette* on De Maistre, circa 1870.

† Published by Nisbet & Co., 21, Berners Street, price 3d.

‡ *Idem*, p. 19.

§ P. 13.

|| P. 19.

appeared some years since in the *Leisure Hour*,* Principal Dawson, of Montreal, showed how marvellously the past and present condition of the various tribes of the New World illustrated and cleared up most of the difficulties surrounding the study of pre-historic man in the Old World.

There we find, still existing contemporaneously, stone, bronze, and iron ages; there we find, side by side, a comparatively high civilisation and utter savagery; there we find how pertinaciously the use of stone implements may survive, and how little trace is left of extinct tribes of considerable refinement after a few hundred years.

Relative to the Cro-magnon skulls, he says:—[These remains] “tell us that primitive man had the same high cerebral organisation which he possesses now, and we may infer the same high intellectual and moral nature, fitting him for communion with God, and headship over the lower world. They indicate, also, like the mound-builders who preceded the North-American Indian, that man’s earlier state was the best, and that he had been a high and noble creature, *before he became a savage*. It is not conceivable that their high development of brain and mind could have spontaneously engrafted itself in a mere brutal and savage life. These gifts must be remnants of a noble organisation, degraded by moral evil. They thus justify the tradition of a golden and Edenic age, and mutely protest against the philosophy of progressive development as applied to man.”†

He thus sums up: “We are now prepared, by the help of American analogies, to give a common-sense answer to the much-agitated question of the primitive barbarism of man and the origin of civilisation. Sacred history and the materialistic archæology of the day concur in the belief that man, *at first*, was destitute of the arts. But from this point they diverge. The former teaches that man without arts was pure and holy, and in unison with his Maker, and that, falling from this condition, one part of mankind simply sank into barbarism, the other (the main body) grasped at arts and civilisation, introduced by great inventors as a substitute for, or in connexion with, a higher spiritual life.

The latter (*i.e.*, Materialism), knowing no God and no spiritual nature in man, supposes him at first a mere animal, in whom the life of intellect and of higher tastes and

* Entitled *The Old World and the New; American Illustrations of European Antiquities*.

† P. 702.

feelings has been *struck out* by physical causes acting on his organism.

"There can, I think," he adds, "be no hesitation in affirming that our old Biblical doctrine is *the more complete and scientific of the two*, and also that which is most in accord with the evidence of history and archæology."*

Observe, that we by no means deny, as some represent, that the history of man has been one of gradual progress on the whole, especially since God's latest revelation of his mind to man; but we assert the extreme frequency of cases of degradation, and doubt man's power of spontaneous elevation to a higher plane. M. Michelet well says: "Nature has not progressed *with a continuous flow*, but with retrograde movements and stoppages which allow her to harmonise everything."†

What are savages, then? Let us hear some opinions of experts. "Savages," says Sir A. Grant, "are swamps and back-waters of the streams of noble humanity." Not *springs* and *sources*, observe.

"All savages," says Niebuhr,‡ "are the degenerated remnants of more civilised races, which had been overpowered by enemies, and driven to take refuge in woods (whence the name *silvaggio*, savage), and there to wander, seeking a precarious subsistence, till they had forgotten most of the arts of settled life, and sunk into a wild state."

Again, Professor Max Müller says: "The most degraded jargons contain the ruins of former greatness and beauty." In the most degraded of all races, the Andaman Islanders, the Tasmanian and Australian aborigines, the Fuegians, the Digger Indians of the Rocky Mountains, the Veddahs of Ceylon, the Negrittos of the East India Islands, and the Bushmen of Africa, we see these "waifs and strays" of humanity harried, persecuted, and pushed back into savage woods or sterile deserts, and almost denuded of the first elements of civilisation, and yet retaining the Promethean spark of humanity, which contact with higher races alone can kindle into a flame.

They are not races in early infancy, but in worn-out decrepitude; their ancestors were, doubtless, once far more highly civilised, and accordingly we are astonished to find amongst many of them stranded relics of lost arts, and very often a somewhat complicated code of etiquette.

* Pp. 814, 815.

† *L'Insecte*, pp. 128, 1053.

‡ Quoted by Archbishop Whately, p. 22.

The process of gradual degeneration is easy enough to imagine. At first, according to the evidence of all history, men kept together in great masses, and so kept each other cultured. Then, as divisions arose and population increased, emigrant bands would begin to go out. In the days of Peleg the earth was "divided."

Then would come hardships, and utter pre-occupation in the struggle with wild nature and wilder beasts of prey for subsistence. Each generation would become more *savage*, and each generation would be less able to teach the next, and so each must see some art forgotten or lost, especially if, as must have occurred in the early world, the bands were isolated for many successive centuries.

The author of *Mountaineering in the Sierra Nevada*, p. 110 (C. King), says: "The conspicuous *retrograde* seemed to me an example of the most hopeless phase of human life. If, as I suppose, we may all, sooner or later, give in our adhesion to the Darwinian theory of development, does not the same law which permits such splendid scope for the better, open to us also possible gulfs of degradation, and are not these chronic emigrants, whose broken-down wagons and weary faces greet you along the dusty highways of the Far West, melancholy examples of beings who have for ever lost the conservatism of home and the power of improvement?"

Here is the same law operating to-day which in times of yore reduced the Bushmen and Tasmanians to what they became, only that its operation is now checked by the increased density of population and facilities for intercourse and locomotion.

It was apparently only in Mesopotamia—always densely peopled—that civilisation preserved a nucleus and a head-centre from which to civilise the whole world.

There can be no doubt that this view of the early, and, perhaps, Divine origin of civilisation and of the subsequent origin of savages, is extremely distasteful to the Development school.

As Dr. Whately says: "The view we have taken of the condition of savages breaks the water-pitcher (as the Greek proverb expresses it) at the very threshold."

"Supposing the animalcule safely conducted by a series of bold conjectures, through the several transmutations, till, from an ape it becomes a man, there is, as we have seen, a failure at the last stage of all; an insurmountable difficulty in the final step from the savage to the civilised man." *

* P. 26.

"So far as we can learn," he adds, "no savage tribe does appear, in point of fact, to have ever civilised themselves." Every alleged case breaks down on inquiry. Catlin's Mandans were never savages, but probably survivors of the Pueblo Indians, who appear once to have inhabited a far wider area.

The Cherokees, who have invented a native alphabet, have been long in contact with Europeans. The Hawaiians and Maoris have been long under the influence of missionaries, and so have the Fuegians, whom they have turned from brute beasts into men once more.

Mr. Herman Merivale, late Professor of History at Oxford, says, in his work on *Colonisation and the Colonies*, p. 294: "Two important lessons may, I think, be drawn from the history of the Spanish missions, and especially those of Paraguay. The first is this: that history has no example to offer us of any successful attempt, *however slight*, to introduce civilisation amongst savage tribes in colonies, or in their vicinity, except through the agency of religious missionaries." And yet even this tendency to degradation has limits, as is pointed out in *Life, Wanderings, and Labour in Eastern Africa*, by Charles New (London: Hodder & Stoughton, 1873), where he says, pp. 94, 95:—

"We talk of races degenerating, and races have degenerated and do degenerate fearfully, *but there would seem to be a point below which human nature cannot sink*. Admitting the possibility of unlimited degeneration, the wonder is that the Wanika, and the peoples of similar character, have not become downright idiots. Yet, they are further removed from idiocy than from a high intellectuality. The great Creator would seem to have placed an impassable barrier to utter degeneracy; but, on the other hand, there is no such barrier in the way of improvement. Is it not astonishing that ages upon ages of neglect, abuse, stagnation, and depravity should not have crushed the *man* altogether out of these people? Yet so it is, *men cannot become brutes, do what they will*; they remain *men* in spite of every degrading influence and however long such influences may continue to operate. The Wanika are a most demoralised and uncultivated people; letters, science, art, philosophy, and religion are altogether unknown to them, yet they possess all the elements of a mental and moral constitution similar to ourselves. In all that regards the affairs of every-day life they are as keen and sharp-witted as the more cultivated, and can hold their own against all comers.

"The precocity of the children is very remarkable. They learn with wonderful ease and quickness, at least equal to, if not surpassing, that displayed by European children. It must be admitted, however, of the uneducated child that as he grows up he becomes much duller, and that by the time he gains maturity his mind settles down into the normal condition of inertness and obtuseness. But we are disposed to think that this would be the case with all people more or less. The mind requires to be educated while it possesses elasticity; in maturity it becomes hard, rigid, and unyielding."

Savages are small isolated communities, situated usually in out-of-the-way continents, or lonely corners of the earth's surface, just where the weak would be driven by the strong. They have no settled habitations, few weapons, few traditions, lead a wandering life, and gain a scanty and precarious existence by eating everything that can be eaten.

So far as we can see, they never invent anything, and cannot be easily persuaded to adopt superior weapons, or tools, or better modes of life, even when they dimly realise their advantages.

Neglected in infancy, and old age, and sickness, much exposed to the weather, and insufficiently nourished, they are dwindling down to the point of extinction. How, then, we ask, could they have gained the knowledge they at present possess of the manufacture of rude weapons,—some with strange scientific principles, like the boomerang; of subtle poisons lurking in insignificant plants, like the "woorali" of Guiana; of the way to produce fire; and a few other processes, simple and necessary to life, and yet not intuitive?

If all savages were pretty nearly equal, then we might plausibly assume that the Creator had implanted just that amount of knowledge in their minds necessary to maintain life; but the reverse is the case.

Almost every conceivable gradation is observable between savagery and civilisation; and, as we have shown that they never improve of *themselves*, this must be the result of various degrees of degradation from a higher state of knowledge.

Sir John Lubbock, in his opening address to the British Association at Dundee, in 1862—an address subsequently elaborated into his interesting work on *Pre-historic Man*—opposed Archbishop Whately's view, which he dubs "the degradation theory," stoutly.

The view of the evolutionists is strongly put by Sir Francis Galton, in his work on *Hereditary Genius*, p. 350, where he says that "the human race were utter savages at the beginning; and, after myriads of years of barbarism, man has but very recently found his way into the paths of morality and civilisation."

Now, as has been frequently pointed out, the difficulty of this view lies in the helplessness of man and the conditions of savage life. "Nature," as President Smith, of the College of New Jersey, U.S., once observed, "has furnished the inferior animals with many and powerful instincts to direct them in the choice of their food, &c.; but man must have been the most forlorn of all creatures. . . . Cast out as an orphan of nature, naked and helpless, he must have perished before he

could have learned to supply his most immediate and urgent wants. . . . *Hardly is it possible,*" he adds, "that man, placed on the surface of the world, in the midst of its forests and marshes, capable of reason, indeed, but without having formed principles to direct its exercise, should have been able to preserve his existence, unless he had *received from his Creator*, along with his being, *some instructions* concerning the employment of his faculties for procuring his subsistence, and inventing the most necessary arts of life."*

Sir John Lubbock tries to rebut the almost universal evidence of degradation and to discredit the legends of a golden age by asserting that all cases of national deterioration are due to *exceptional* causes.

This deserves an answer. Now, we ask, Is it not the case that the earliest skulls of primitive man are *by no means* the most degraded or wanting in brain power?† We have already produced evidence to this effect.

Layard says that "in Assyria, as in Egypt, the arts do not appear to have advanced after the construction of the earliest edifices with which we are acquainted, *but rather to have declined*. The most ancient sculptures we possess are the most correct and severe in form, and show the highest degree of taste in the details";‡ and a writer on Egypt says: "The *more remote* the antiquity of the records which have been preserved to us, *the greater* is the skill, the power, the knowledge, and the taste which they reveal."

The researches of Mr. Geo. Smith, Sir G. Rawlinson, Mr. Rassam, Mr. Chas. Boscawen, and of the Egyptologists, prove the same thing.

Even the sites of Babylon, Nineveh, and Thebes, and many other great cities of antiquity are to-day utterly desolate or inhabited by mere savages; while China and India, which appear to have received the main body of emigrants from the plains of Mesopotamia, are gradually but surely losing their aboriginal culture, or remaining at best stationary; but the nations of the West, aided by Christianity, are vastly surpassing those whose ancestors were sages and philosophers when the Britons and Gauls were painted savages.

M. Huc, the Jesuit missionary, in his work on *The Chinese*

* Quoted by Dr. Whately, p. 22.

† We find little trace of the time "when wild in woods the noble savage ran."

‡ Layard's *Nineveh*, vol. ii. p. 157.

Empire, bears witness to the gradual deterioration of the porcelain, silk, and other ingenious manufactures of the Chinese. J. T. Cooper, in his *Travels of a Pioneer of Commerce*, says that he observed, *wherever he went*, Chinese art *visibly on the decline*, and the state of the imperial public buildings shows how great is the contrast between the present and former governments. The network of canals and public works connecting Hankow with Shasu is a monument of the ancient industry and declining vigour of the Chinese race, now falling into decay.

The modern Persians dwell in vastly inferior houses to those of the Persians who built Persepolis and conquered Babylon.

Respecting Dr. Schliemann's supposed discovery of the site of Troy, we are told that "of these five towns, the *two undermost* were by far the most advanced in civilisation, which fact, as well as the presence of numerous stone implements in all the strata, *side by side* with tools, arms, furniture of all sorts, in copper, lead, and the precious metals, runs counter to all ideas of archæology of the approved Scandinavian school."

In Afghanistan, again, and in Swat, Dr. Leitner has discovered marvellous relics of the former Bactrian civilisation existing in what is now a desolate country. We read of "colossal idols, caves, and other records of the existence of a race of men unknown either to history or tradition."* At Bamian, in Afghanistan, near Kafiristan on the river Kunduz, and again at Kafir-kote, on the river Indus, in the Punjab, of ruins of a castle, like many to be seen on the summits of inaccessible mountains in these countries. "But where," Wood asks, "are now those giants of the earth, those sons of Anakim's generation? Gone for ever, and a moral catastrophe, antecedent to Alexander's invasion, seems to have blighted science, and thrown backward the intellect of man."†

The former civilisation of Khiva, and Bokhara, and Central Asia generally, far surpasses, it is needless to say, the present condition of these countries. Sir Peter Lumsden bears witness to this.

The history of Spanish America, again, reinforces this melancholy tale of retrogression. As a recent writer says‡ of Peru, "I call it (*i.e.*, the Spanish conquest) *untoward*, because there was under the Incas a better government, better protection for life, and better facilities for the pursuit of happiness

* Wood's *Journey to the Source of the Oxus*.

† *Ibid.*, p. 57.

‡ *Peru; Incidents of Travel and Exploration in the Land of the Incas*. By E. George Squier. Macmillan, 1877, p. 573

than have existed since the conquest or do exist to-day. The material prosperity of the country was far in advance of what it is now. There were greater facilities of intercourse, a wider agriculture, more manufactures, less pauperism and vice, and—shall I say it?—a purer and more useful religion.” Truly a home-thrust for us Christians!

Even in Patagonia, which we think entirely barbarous, traces of higher civilisation are found—of a golden age.

We read in Captain Muster’s *At Home amongst the Patagonians*,* that “ancient bolas (lasso-stones) are not unfrequently found. These are highly valued by the Indians, and differ from those in present use by having grooves cut round them, and by their *larger size and greater weight*.” Here again is deterioration. Also, he adds, “Casemiro informed me that *formerly* the old men were in the habit of singing the traditions of the tribe, and also some sort of prayer.”† Now they *have forgotten* these. This does not look like *improving*. Without writing and depending only upon oral tradition, man must deteriorate.

In the Yenissei Province, in Siberia, is the district of Minsk, most interesting to ethnologists on account of the numerous mementos it offers of primitive inhabitants, altogether different from those of the present day.‡ That people, almost entirely unknown as yet, were the Tchonds, and the numerous objects of sculpture and inscriptions on the enormous blocks of stone, of which their tumulus-monuments had been composed, are proofs of a certain culture where all is now uncivilised. They were probably driven out of their original country; other inscriptions are found on the banks of the Yenissei and Traba.

The sacred books of the Hindoos speak of powerful states existing in remote antiquity, where the British merchant-pioneers only found savage chieftains. The voyages of the ancient Javanese, Japanese, and Malays, also, appear to have extended in former ages to far greater distances than their modern descendants attempt.

These remarkable facts seem to endorse the opinion of the ancient poets, who, since the world began, have sung of golden, silvern, and leaden ages, and have attributed to the past the brightest passages in the history of mankind.

* P. 166.

† P. 172.

‡ See *The Land of the Czar*, by O. W. Wahl. Chapman & Hall, 1875. Pp. 183-4.

Examine the principal countries in the old and new worlds, and there will be found evident traces of a prior and generally superior civilisation to that now existing, of antiquities and structures whose origin and uses are clouded in mystery.

India and Ceylon are covered with ancient cities, temples, caves and roads, dating from Bhuddist times, and even in the forests of Java and Sumatra, and in the wildernesses of Cambodia, similar relics, deserted and often forgotten, are found.

In the northern island of Japan, *i.e.* Yesso, which is inhabited by a very primitive race, called the Ainos or "hairy men," and which has only been subject to Japanese rule since 1854, there are numerous vestiges of large cities, roads, canals and mines skilfully worked, and other traces of towns and castles imbedded in the primeval forest.*

Possibly these may have been constructed by the Aztecs, of Mexico, whose traditions relate that they passed into America by way of the Aleutian Islands (which commence at Yesso) about the eleventh century.

Polynesia is full of relics of pre-historic civilisation,—temples, pyramids, and gigantic idols,—as I have pointed out in a paper read before the Americanist Congress held at Copenhagen.

In Sofala, in South Africa, Herr Mauch has discovered ruined cities, possibly relics of the time of Solomon. All these relics of antiquity and civilisation were manifestly the work of civilised or semi-civilised races, who have now perished from the earth.†

It is a curious fact that nothing is more difficult than to trace the real authors of the civilisation of those ancient states which formerly constituted the ruling powers of the world; but it is impossible to conceive that this would have been the case if arts and sciences had really originated with certain individuals, instead of coming from a primitive nation, *i.e.*, the survivors from the Flood.

If you attempt to discover who were the founders of Roman civilisation, you find amidst a cloud of legends that the greater part of it came from the mysterious Etruscans or Pelasgi who preceded them in Italy; question the ancient annals of Greece, and you will be similarly told that Greek culture was

* See *The Leisure Hour*, on "The Ainos of Yesso," by H.M. Consul at Hakodadi.

† In our own land are Stonehenge and Abury, whose construction remains a mystery.

not home-born or self-evolved, but derived from Phœnicia or Egypt, and so you arrive at last at the primitive race in the plains of Shinar.

Whilst all nations are thus unanimous in referring the origin of civilisation to strangers and aliens, they ought, according to Sir John Lubbock, to have gradually built it up for themselves.

Mr. Tylor, in his work on *Primitive Culture*, considers that "The master-key to the investigation of man's primeval condition is held by pre-historic archæology, that key being the evidence of the Stone Age, proving that men of remotely ancient ages were in the savage state."*

All this may be fully allowed, and yet Archbishop Whately's theory may be true.

Pre-historic archæology tells at least as much on our side as on theirs.

It shows how immensely the age of the world has been under-estimated, but in no other way alters our belief.

The division of antiquity into stone, copper, and iron ages is by no means unanimously received by archæologists, but, even if it were, it precisely tallies with our hypothesis—that whilst in the centres of population and culture a portion of the divinely-communicated gift of civilisation was kept up, in the remoter countries, the more isolated communities fell into the depths of barbarism, only to be recovered from thence by contact with superior races, the introduction of metals, and acquaintance with the truths of Christianity, for, without the latter, the contact of superior with inferior races almost invariably produces rapid extinction.

I believe, then, the relics of the Stone and other ages to be very ancient, but the civilisation and monuments of China, India, and Egypt to be fully as ancient, perhaps even more ancient still; and I am supported in this belief by a vast array of historical and archæological evidence.

An inquiry into the antecedents of (so-called) savage races will often evoke clear evidence that they are not in what Sir John Lubbock and his friends would be pleased to call "a state of nature."

Thus the Rev. Jas. Shooter, in a work upon *The Kaffirs of Natal*, says that they are "no savages."

They have a tradition of a former worship of "one god," which has now almost died out.

* *Athenæum* Review, May 6, 1871.

They will not worship their god in the presence of soldiers or arms—a curious fact in so military a race.

This reminds us of Quetzalcoatl, the white god of Mexico, who “stopped his ears when they told him of war,” and surely it implies a dim recollection of a purer theology.

Their language, also, exhibits traces of refinement strangely out of place in so barbarous a race.

Mr. Taylor, New Zealand missionary, relates, in his work on *New Zealand and its Inhabitants*, that the Maories had traditions of a time when they were far more numerous than when discovered by Europeans, when universal peace prevailed, and the tribes met annually in a large central temple of wood.

Also, that the name of the man who first began cannibalism by way of revenge, barely fifty years before Tasman landed, was well remembered.

Alas, how rapidly had deterioration spread in these islands!

The kindred races in Tahiti and the Sandwich Islands did not generally practise this fearful custom, and seemed horrified at it.

The large double-canoes of the Maories, in which they performed long voyages, have gradually fallen into desuetude.

With regard to the Esquimaux, polar voyagers find everywhere traces of deserted houses and settlements.*

Dr. Hayes, in his interesting work on *The open Polar Sea* (p. 385), says: “Kalutunah’s first question was, whether I had found any Esquimaux?”

“Before starting I had frequently spoken to him concerning the extension of his people to the north, and he recited to me a well-established tradition of the time, that the Esquimaux once extended to the north and south; and that, finally, the tribe, now inhabiting the coast from Cape York to Smith Land, were cut off by the accumulation of ice as well above as below them; and he believed that Esquimaux were living at this present time in both directions.

“That there was once no break in the communication of the natives of the region about Upernavik with those on the shores of Melville Bay, there can be no doubt; and Kalutunah appeared to think the same would hold good in the opposite direction.

“The ice has accumulated in Smith Sound as it has in Melville Bay; and what were evidently once prosperous hunt-

* The recent German Arctic Expedition discovered the same thing.

ing grounds, up to the very face of the Humboldt Glacier, are now barren wastes, where a living thing rarely comes."

At various places along the coast Dr. Kane found the remains of ancient huts, and lower down the coast, towards the mouth of the sound, there are many of more recent date.

Near Cairn Point, there is a hut which had been abandoned but a year before Dr. Kane's visit in 1853, and has not been occupied since.

"In Van Rensselaer harbour there are several huts which had been inhabited by the last generation. . . . I talked to the oldest hunter of the tribe . . . about the future of the tribe. The prospect was the same as to Kalutunah—'our people have but a few more suns to live.'"

Mr. Merivale observes: "Habitual complaints of diminution of numbers, legendary records of a past golden age, heard amongst all savages, even when never previously visited by whites (such as by Major Pike, in his journey to the Rocky Mountains more than forty years ago; by Dr. Kane, from the Esquimaux; and by the first settlers in New Zealand), prove that they (*i.e.*, savages) are but the dwindling remnants of great nations.

"Breeding in and in will never suffice to occasion this decay, or the lonely parts of the earth would have been long since depopulated.

"There are portions of the Scottish Highlands, the Swiss and Italian Alps, and doubtless other mountain tracts, in which the constant intermarriage of kindred has prevailed for ages from the necessities of the case, and yet finer races are not to be found. The gradual loss of comforts and refinements; the obscuration of religious and moral truths; constant wars between tribes; their sanguinary customs, particularly infanticide; the frequency of deaths at an early age; and the inferior productiveness of marriages, caused apparently by the hardships peculiar to their mode of life, are the true causes of the decay of all savage tribes."

Yet, according to Sir John Lubbock, they ought to be increasing and advancing rapidly!

But this is never found to be the case, not even amongst the fine Maories; but only in the exceptional instances of the Chippeways, Creeks, and races of Spanish America, who are either carefully protected from encroachment by legislation or confronted with weak and inferior white races.*

* Most of these have much white blood in them also.

In the *Adventures of Captain Bonneville*, edited by Washington Irving, we read with regard to some of the Indians near the Rocky Mountains:—"Simply to call these people religious would convey but a faint idea of the deep tone of piety and devotion which pervades the whole of their conduct. They are more like a nation of saints than a horde of savages."

Dr. Martius, the distinguished German ethnologist, gives it as his deliberate opinion, "that the nations of the New World are *not* in a state of primitive barbarism or living in the original simplicity of uncultured nature; but that they are, on the contrary, the last remains of a people once high in the scale of civilisation and mental improvement, now almost worn out, and perishing, and sunk into the lowest stage of decline and barbarism." Dr. Pritchard also says:—"Attentive observers have been struck with manifestations of greater energy, mental and vigour, of more intense and deeper feelings, of a more reflective mind, of greater fortitude, and more consistent perseverance in enterprises and all pursuits, when they have compared the natives of the New World with the sensual, volatile, and almost animalised savages who are still to be found in some quarters of the Old Continent. They have been equally impressed by the sullen and unsocial character, by the proud, apathetic endurance, by the feeble influence of social affections, by the intensity of hatred and revenge, and the deep malice-concealing dissimulation so remarkable amid the dark solitude of the American forests."

Squier, in his *Travels in Central America*, vol. ii. p. 331, says:—"The state of separation,—*disruption*, as it is sometimes called,—in which the American race was found, has been variously attributed to a radical physiological defect in its character, to extraordinary natural phenomena To me, however, this separation and subdivision of the aboriginal race, and the exclusion of its different families, in respect to each other, seem rather due to long periods of time, and long-continued migrations of single nations and tribes from one portion of the continent to the other."

Probably no country more distinctly bears in its history proofs of the facility with which a comparatively civilised country may become reduced to barbarism, in a short space of time, than Ireland. In the time of the Anglo-Saxons, it was known as the "Isle of Saints," the abode of learning and the arts, and the school of the youth of France and Britain; but, after the Danish and Norman invasions had passed over it, it became a mere battle-field of conflicting parties; its churches

were laid in ruins, and its people became barbarous and ignorant. Thus, too, Rome was overwhelmed by the northern tribes, and civilisation, though preserved amongst the Arabs, did not reappear until Christianity pervaded the West.

Loss of the conception of a Deity—so extraordinary a characteristic of some savages—is paralleled by the revelations occasionally made of the condition of our street arabs, showing that it is by no means incompatible with a former state of civilisation.

Sir John Lubbock's objections to Archbishop Whately's theory appear very unsatisfactory and shallow when critically examined; for instance, he stated, at Dundee, that the Andaman Islanders were an instance of a race which had spontaneously improved, having invented or adopted "the outrigger" within the past few years.

Now, if he will refer to Dr. Mouatt's interesting work on the Andaman Islands, he will find that the Burmese have long been in the habit of frequenting the group to obtain the prized edible nests for barter with the Chinese; and, as the Burmese, Cingalese, and other inhabitants of these seas are well acquainted with the principle of the "outrigger," it appears much the most probable theory that they (the Andamaners) copied them, instead of inventing a principle already well known.

Besides this, these very Andamaners appear to afford a striking example of the process of deterioration which Sir J. Lubbock particularly singles out for attack!

Not long since, they habitually visited the Nicobar group, some distance from them, on predatory excursions, and the old Mohammedan geographers mention their piracies in the *Straits of Malacca*. Surely their canoes must have deteriorated, instead of improved (like those of the New Zealanders)! The presence of long-civilised plants, such as the banana, which only seeds in one spot on earth, *i.e.*, the Andamans, seems also to prove former intercourse with the main land.

Sir J. Lubbock also stated that the following circumstances seemed to argue against the truth of the "degradation theory," *i.e.*, that in many communities of savage islanders and others there were no traces of a former civilisation, no remains of pottery (which it was almost impossible to destroy in any lapse of time), buildings, or other arts; Australia, the South Sea Islands, and America being destitute of antiquities, or even the bones of domestic animals.

But these assertions, if capable of proof, do not appear to me to necessarily invalidate Whately's theory.

It is, I suppose, quite possible for a savage nation to emigrate, and nobody pretends to imagine that the *whole world* was brought under cultivation after the "confusion of tongues and the dispersion of mankind."

The chief traces of primitive civilisation would occur, naturally, in man's oldest colonies, and where he has been least disturbed; and, accordingly, we find them existing in Mesopotamia, Egypt, China, and India.

I cannot agree with Sir John Lubbock that our domestic animals are a necessary concomitant of civilisation; for the civilisation of the Aztecs, and probably also the still higher refinement of their predecessors, the Toltecs, was achieved without the aid of a single domestic animal; and the Peruvians had only one perfectly unknown to the ancients—the llama—and yet the refinement of both these races was fully equal to that of ancient Greece and Rome.

Again, how can Sir John Lubbock say that no traces of civilisation are to be found in America or in the South Sea Islands?

Does he not know that the whole continent of America, from the Great Lakes to Bolivia, is thickly studded with ruined towns, pyramids, forts, tombs, sculptures, temples, and earth-mounds of vast antiquity?

Does he not remember the discovery of upwards of fifty-four ruined cities in Central America, and the assertion of Humboldt, that the ruined cities on the River Gila alone would accommodate 80,000 inhabitants?

Has he not heard that, to this day, ancient pottery is found thickly strewn over the whole State of Arizona and North Mexico?

Then, as to the South Sea Islands, there exist, in Hawai, Tahiti, and Easter Island, Cyclopean relics of civilised races which have been already alluded to.

Sir John Lubbock's conclusions respecting the South Sea Islands are peculiarly unfortunate, for a high authority, Mr. Crawfurd, concludes, from the evidence of language, that there was in ante-historic times a great Polynesian nation, *whose speech lies at the basis of all the Malay and Polynesian languages at the present day*. The massive ruins and remains of pyramidal and terraced structures date probably from this primeval race.

H. C. von der Gabelentz, after a careful investigation of the languages, corroborates this. The inference is, that "the whole vast population of black and brown peoples,—the Malays, Polynesians, and Melanesians,—may be referred to *one* source, and, in all probability, be joined with the Turanian

race of Asia."* The researches of Max Müller and others prove the same affinities to exist.

Captain Moresby, in *The Voyage of the Basilisk* to South-West New Guinea (now British), speaks of Malay-Polynesian inhabitants there having the arts of pottery, weaving, &c. (A gentleman from Brazil states that the cheap tiles used for roofing there easily crumble into dust, being imperfectly baked.) There is another clear proof of degeneration in the history of the aborigines of Formosa. In the seventeenth century the Dutch held Formosa for thirty-eight years, until driven out by the pirate Coxinga, who, in turn, had to cede it to the Chinese. It is said that during their stay the Dutch civilised the aboriginal tribes, which, however, have now turned to complete savagery, and it is even said cannibalism, resembling somewhat the Dyaks of Borneo and Malay-Polynesians. Curiously, however, in 1871, 210 years after the Dutch exit, Mr. Legendre, the American Consul at Amoy, found amongst the Baksa tribe, inhabiting a district twenty-eight miles east of Takow, documents written in the Roman character; and another traveller, Mr. J. B. Steere, of the University of Michigan, found about the same place a number of papers, apparently deeds and contracts, written in the same manner. These are much treasured by their owners, *although the art of writing and the language in which they are written have been wholly lost.*†

From the dates it appears that some of these were written a century and a half after the Dutch left, showing how long their teaching had survived among these wild tribes, and also showing the *possibility* of degeneration when secluded from civilising influences.

Thus even the dying out of arts once flourishing is well attested.

The Rev. J. G. Paton, of the New Hebrides Mission, reports, in *The Southern Cross*, that earthenware is now only made on Santo, although remains prove that it used to be made also on the other islands of the group. *Pace* Sir John Lubbock, the art may die out, and all trace disappear, as native pottery (for instance, in Fiji and elsewhere) is very fragile, and crumbles easily to dust.

In speaking of the manufactures of the Otuvans—a Malay race inhabiting the Disappointment Group in the South Pacific—Dr. Pickering says ‡ :—

* See Bruce's *Manual of Ethnology*, pp. 158–160, 162, 167, 168.

† *Times* Article, February 9, 1885, on Formosa and its Pirate Chief.

‡ See his *Physical History of Man*, p. 52.

"If we examine the handiwork, we shall perceive an apparent *aiming at former arts*, as though the knowledge were present, and the materials only wanting." Here is clear evidence of *retrogression*!

That acute thinker, Mr. Greg,* is puzzled by the numberless instances of degeneration met with in the world, and does not see that the two processes—rising and falling—may have gone on contemporaneously, just as the trunk may be warm and the extremities cold at one and the same time.

"I should be sorry," he concludes, "to express a confident conviction on either side. All I can say is, that on the one hand the proof that man cannot have been originally civilised is logically almost irresistible; while all evidence, monumental or documentary, above the earth's surface, or disinterred from whatever depths, show us everywhere civilisation antecedent, in time at least, if not in actual causation and historic progress, to barbarism. . . . Ages before the barbarian the civilisation existed on whose relics he trampled: the forests of uncounted centuries cover the graves, the temples, the fortresses of empires whose very names are lost for ever."

In the January (1885) number of the *Nineteenth Century*, Professor Max Müller, in an article on "The Origin of Savages," whilst resenting the question whether man began his career as a savage or a child—probably because it lands him in a dilemma—clearly proves that the theory which would identify the modern savage with primitive man is untenable, as also he deems Darwin's idea that he could be the child of non-human parents.

In support of Archbishop Whately's theory, I beg to call attention to the opinion of that veteran African traveller, Dr. Livingstone, as recorded in his last work, *A Narrative of an Expedition to the Zambesi and its Tributaries*. On pp. 508-510 he says: "Since we find that men, who already possess a knowledge of the arts needed by even the lowest savages, are swept off the earth when reduced to a dependence on wild roots and fruits alone, it is nearly certain that if they ever had been in what is called a state of nature, from being so much less fitted for supporting and taking care of themselves than the brutes, they could not have lived long enough to have attained even to the ordinary state of savages. They could not have survived for a sufficient period to invent anything, such as we who are not savages, and know how to make the egg stand on its end, think that we easily could have invented.

* In his *Devil's Advocate*. Trübner, 1876.

"The existence, therefore, of the various instruments in use among the Africans, and other partially-civilised people, indicates the communication of instruction at some period from some Being superior to man himself.

"The art of making fire is the same in India as in Africa. The smelting furnaces for reducing iron and copper from the ores are also similar.

"Yellow hæmatite, which bears not the slightest resemblance, either in colour or weight, to the metal, is employed near Kolobeng for the production of iron.

"Malachite, the precious green stone, used in civilised life for vases, would never be suspected by the uninstructed to be a rich ore of copper, and yet it is extensively smelted for rings and other ornaments in the heart of Africa. A copper bar of native manufacture, four feet long, was offered to us for sale at Chinsambas.

"These arts are monuments attesting the fact that some instruction from above must, at some time or other, have been supplied to mankind; and, as Archbishop Whately says, 'the most probable conclusion is that man, when first created, or very shortly afterwards, was advanced by the Creator himself to a state above that of a mere savage.'

"The argument for an original revelation to man, though quite independent of the Bible history, tends to confirm that history.

"It is of the same nature with this, that man could not have *made* himself, and therefore must have had a *Divine Creator*. Mankind could not have civilised themselves, and therefore must have had a super-human *Instructor*.

"In connection with this subject, it is remarkable that, throughout successive generations, no change has taken place in the form of the various inventions.

"Hammers, tongs, hoes, axes, adzes, handles to them; needles, bows and arrows, with the mode of feathering the latter; spears for killing game, with spear-heads having what is termed "dish" on both sides, to give them when thrown the rotatory motion of rifle-balls;* the arts of spinning and weaving, with that of pounding and steeping the inner bark of a tree till it serves as clothing; millstones for grinding corn into meal; the manufacture of the same kinds of pots, or *chatties*, as in India; the art of cooking, of brewing beer, and straining it, as was done in ancient Egypt; fish-hooks, fishing and hunting nets, fish baskets and weirs, the same as

* The same is seen in American arrows—*rifled* arrows. Article 6, Principal Dawson's "Old World and New," in *The Leisure Hour*.

in the Highlands of Scotland; traps for catching animals, &c., &c.—have all been so very permanent from age to age, and some of them of identical patterns, are so widely spread over the globe as to render it probable that they were all, at least in some degree, derived from one source.

"The African traditions, which seem possessed of the same unchangeability as the arts to which they relate, like those of all other nations, refer their origin to a superior Being, and it is much more reasonable to receive the hints given in Genesis, concerning direct instruction from God to our first parents or their children in religious or moral duties, and probably in the knowledge of the arts of life (Gen. iii. 21-23, 'Make coats of skins and clothe them.' 'Sent him forth to till the ground,'—implying teaching), than to give credence to the theory that untaught savage man subsisted in a state which would prove fatal to all his descendants, and that, in such a helpless state, he made many inventions, which most of his progeny retained, but never improved upon, during some thirty centuries."

Charles Brooke, afterwards Rajah of Sarawak, in his work, *Ten Years in Sarawak* (pp. 48-51), says, with regard to the Dyaks of Borneo, "Among their present *habitats* the remains of former villages, possessing inhabitants of a far higher state of civilisation, are frequently being found.

"Several have been dug up since the publishing of Mr. St. John's book, in which he describes a few antiquities* which had been disinterred near Sarawak, and not only have they been found there, but also far in the interior, showing that a high state of civilisation once existed. The natives also employ a very ingenious mechanical contrivance for creating fire by means of the exhaustion of air called a 'besi api.'

"One is surprised," says Mr. Brooke, "to meet with this and other scientific appliances in common use amongst the inhabitants of these lands, who even eat with their fingers, and possess other habits which give them the name of demoniacal cut-throats.

"They are far superior to the New Zealanders in many of the useful accomplishments; and a question often arises in the mind whether it be the dusky remains of olden civilisation or the dawning of day consequent on an improved and progressing state of spontaneous development. If I were to reason on the subject, the facts produced would tend to support the previous idea—namely, that these tribes are the offshoots of

* Chiefly gold ornaments.

more civilised people, and have inherited customs from their forefathers, most of which are now forgotten; the useful manufacture of weapons and implements for their own employments remaining still known to them.

"It cannot be denied, also, that there are some of their practices much in advance of the appearance they present as a race;—gleams of sunshine showing through a cloudy atmosphere.

"For instance, their forges and ability to manufacture weapons for warfare are of a very superior quality; and some tribes in the interior of Rejang are even able to smelt their own iron, which is second to no other for making arms.

"We find the curious, complex manufacture of short swords, possessing concave and convex blades, which are capable, by this means, of penetrating either wood or flesh to a surprising extent; but much practice is required to use them properly, as a mistake in the angle of cutting would bring the weapon round and often wound the holder."

Mr. Pritchard, in his *Polynesian Researches* (p. 381), speaks of the degeneration of the Fijians and other Polynesians thus:

"The very old men of Fiji—the repositories of their early lore—unanimously maintain that there was a time in their history when neither cannibalism nor war devastated their beautiful islands. . . .

"In both Samoa and Tonga there are somewhat similar traditions, which state that there was a time when war was unknown, and when the people lived happily together, and in greater numbers than at the present day."

Instances of this character might be indefinitely multiplied; and the universality of the traditions of the Creation of Man, the Deluge, the Ark, the Tower of Babel, &c., affords a strong confirmation of the truth of the Biblical narrative, which certainly does not represent primitive man as a savage.

No doubt the manners and customs of many civilised nations do contain, as Sir John Lubbock and others show, relics of former barbarism; but there is no evidence to prove that this barbarism was *primitive*, and that some degree of civilisation had not preceded it.

A calm and dispassionate review, then, of the whole question may teach us to distrust the *à priori* and glib reasonings of those who argue for the *spontaneous* development of civilisation, and incline us to believe that, without "an original impetus" and "a helping hand" from higher powers, man would never have reached his present proud pinnacle of culture and refinement, as well as to authorise us most positively to assert that "savagery" was *not* the primitive condition of man.

THE CHAIRMAN (The Right Hon. A. S. AYRTON).—I will now convey the thanks of the meeting to the author, and invite comments on the paper.

A VISITOR.—May I be permitted to ask a question? It is, whether, among the evidences of the progressive changes of civilisation, there are any evidences of moral as well as physical change—whether in the nature of evolution or degradation, were the earlier races, whose high state of civilisation we have heard of to-night, superior, not only in the material respects mentioned, but also in regard to their moral condition? Were they superior, morally or not?

Mr. ALLEN.—The evidence on this point is conflicting. There is evidence of peoples being split up and deteriorating, but it is not always evident from what causes the decay proceeded; nor is there much to show in elucidation of the point raised. We have no proof of the cave men developing into the people of Europe. They may have existed *concurrently* with more highly civilised races in more favoured localities, as is actually the case in America. We may have hit upon the remains of the outcasts, and not yet discovered those of their civilised contemporaries.

THE CHAIRMAN.—In reference to the subject of the paper, I think you cannot assume that man has always been undergoing a process of civilisation, nor of degradation. There does not appear to be any universality of facts—agreeing over the whole of the earth. If you turn to the province of Granada—to which so much attention had lately been drawn by the disastrous results of the earthquakes from which that province has suffered—you will find there, in the present day, cave men living side by side with the Spaniards. It is difficult to say how it comes that it is so, but there is the fact. In some parts of that province instead of a row of houses you see a row of entrances—something not unlike the appearance of a rabbit warren. In these caves the chairs and sofas of ordinary houses are replaced by seats cut out of the soil. Now, here we have cave men living in the same civilised manner as the other inhabitants of the country. Seeing this state of things existing in the present day, we cannot but feel that it is very difficult to speculate upon what happened a thousand or two or three thousand years ago. The fact that the cave men of former days dwelt in caves is no proof of the moral condition they lived in. You find things of a very different character going on side by side, hence isolated facts afford no justification for generalisations. We can recall the demonstration that was given as to the age of the skeleton of a man found on a recent occasion, but that demonstration was upset by the subsequent finding of the buttons of the Queen's service close beside the skeleton. Generalisation from particular instances appears to have been carried to extremes. It is better to begin at the other end. But, when we survey anything we may come in contact with in this world, we can find ample evidence of the creative and preserving influence of a predominating and Almighty Being of the most infinite power. When we assume the existence of a God, we get a basis upon which we can found an intelligent comprehension of the subject. We

have, too, the fact that no two things are ever exactly alike. If you assume that God created man, you have this question to meet, Has a God of infinite wisdom and capacity made man in perfection? The theory that is most consistent with the belief we all hold is, that the work was the most perfect in the first instance. The mind of man works as a whole, though it is made up of many faculties. Various men have various faculties more or less developed. But it is difficult to imagine that our minds are superior to those that the Creator directly made. The Creator gave man all the faculties required to enable him to develop language, and we find the older languages superior in simplicity and completeness of arrangement to the more recent. Man being thus gifted, it may be assumed that language was very soon brought to perfection. Civilisation—or what are commonly regarded as the evidences or tokens of civilisation—is very much a matter of opinion, of custom, of circumstance. Among the Hindoos, the most correct form of dress is a garment made without a seam. Among them such a garment becomes evidence of civilisation. Characteristics of this kind are largely due to hygienic conditions. The whole subject is one involved in the greatest complexity.

Mr. S. R. PATTISON, F.G.S.—I have not much to offer in the way of remarks upon the able paper we have heard. The subject is one of extreme difficulty. The question of the evolution and degradation of man by a gradual process is exceedingly important, and is related to many others of almost equally great importance, and I am very glad that it has been brought under consideration here. The paper which Mr. Allen has read has made some additions to our knowledge of the subject; or perhaps, rather, I should say that the paper has served to put our knowledge in order; and we are thus much better equipped to discuss the question. I would very strongly deprecate the discussion of a subject like this, that would deal with it without the full consideration which it demands. I think the general conclusions of the author have been well sustained; but it is essentially necessary that we should abstain from hasty generalisations, such as have been assumed upon the finding of flint implements—that they are a proof that the people have been in a savage condition. Such arguments should be dismissed. Upon the whole, there is no decisive circumstance that can put the matter beyond dispute. The balance of evidence is in favour of the theory that mankind has fallen from a higher estate. The argument from language is very strong, and is strikingly supported by others.

Mr. H. C. DENT, C.E., F.L.S.—I am entirely in accord with the views the lecturer has expressed, but the line of thought I have worked out on this subject is not entirely the same. Before reading the few notes I have prepared I may mention one point. I refer to pottery. This is very often found in ancient remains; but in some parts of the interior of Brazil, whence I have lately returned, almost the only pottery used is the tiles on the roofs of the houses, which are sold at about £3 per 1,000. These are so friable that they would inevitably be destroyed, and leave no remains. With regard to the degene-

ration of man, I contend that man is a family with only one genus, *Homo*. Unless we throw over one of the most important statements of revealed religion, that as to the origin of man, we must believe that all tribes in a low condition, physical or intellectual, moral or religious, represent degradation. The Duke of Argyll, in *Unity of Nature*, says, that as the first men could not have been cannibals or indulged in infanticide—or the race could not have been increased—the existence of these two customs alone proves degeneration. The most ancient fossil remains of man that have been found exhibit a very high type, both in physical development and intellectual capacity. None of them display as low types as the existing Australians, Terra del Fuegians, or the bushmen of South Africa, who are degraded Hottentots (Max Müller). Fossil skulls found in the limestone caves of the valley of the Rio Paraopéba, Minas Geraes, Brazil, are of the same type as the Indians of to-day, who are now, owing to the Portuguese settlement, being pushed away into restricted and distant areas. A condition of high mental development, which the fossil men present, does not necessarily represent a correspondingly advanced civilisation, refinement, or progress in arts and sciences. It denotes merely possession of an intelligent will, capable of development, and able to profit by experience. I maintain that man was created noble and pure, with vast capabilities. Then came that mysterious catastrophe which we call the Fall, and synchronously the promise of a wonderful Redemption, which in course of time was effected. Subsequent on the Fall came degradation, degeneration of the ante-diluvian world, of the Israelites, of the Hindoos, Mahometans, and even of Christianity. In the records of the rocks we find always that new forms were introduced in their highest state, full of vigour. They worked out the objects of their creation, and then either became extinct, on the introduction of higher forms, or remain till to-day, degraded, degenerated, and scantily represented. The same argument of degeneration holds good as regards man. As the struggle to gain the necessaries for bare existence increases, so man degenerates. Driven out by stronger tribes, the weaker are forced to live under the most uncongenial conditions, *e.g.*, Eskimos and nations aforesaid. These all now live in countries most unfavourable, with surroundings the least conducive to existence, let alone advancement. Mr. Drummond, in *Natural Law in the Spiritual World*, has pointed out that death means “the want of correspondence with the environment,” and that “the organism is but a part, nature is the complement.” The nations of the temperate zones have, at least, an environment conducive to progress; grasses which produce food, *e.g.*, wheat; animals capable of domestication; a climate where excessive labour is, at least, possible during a prolonged period. The people I have referred to have none of these advantages, and so it is with the Indians on the Amazon. On the introduction of a civilised community into the midst of uncivilised nations, the latter cannot come into correspondence with their environment: they either become extinct—as in the case of the North American Indians, who are a race of warlike hunters with no literature, but with a beautiful and complex language—or they become and continue a

subjected and servile race, like the negroes or Malays. I came across, in Brazil, white men, the descendants of the Portuguese, negroes, and a few tame Indians, all Christians, and living together under parallel conditions. Of these races, though the whites are most civilised, the negroes are physically the most highly organised, and the most prolific. I met some mulattoes who were not only intelligent, but very scientific, and especially skilled in modern languages; notably one, a government engineer, who is termed the "Lesseps of Brazil."

Mr. M. H. HABERSON.—The paper would seem to show that we are now in possession of facts on the affirmative side of the question of more value as evidence than those which can be adduced upon the other side. Max Müller has recently expressed the idea that fetishism is not the basis of religion. Man has had always an idea of the Unseen, and from simple primitive beliefs his many superstitious practices have had their origin. There is abundant evidence that the natural tendency of man has been downward. Buddha, and Zoroaster, and Confucius taught a much purer and more elevated doctrine than that which is now held by their followers. That which we find in the corners of the earth, people degraded to the very lowest condition, corresponds with the downward process which we know to be a fact of history. Bearing in mind the corruptions in religion among Jews and Christians, it cannot be denied that we have obvious facts on the affirmative side of the question to guide our inquiry.

Mr. J. HASSELL.—The paper read expresses my own views. As to the records of the iron, stone, and bronze ages, it must not be forgotten that some of the best authorities have admitted that the bronze implements found *are* bronze, that is, are made of an alloy of tin and copper. So it is clear that the tribes that produced these implements must have had sufficient knowledge to distinguish the ores of metals; some extent of knowledge is required for this purpose; it is equally clear that the people of that age must, therefore, have been acquainted with the method of reducing the ores to the metallic state. This is a proof that these people were not as degraded as some writers assert. I think our thanks are due to Mr. Allen for his orderly arrangement of the facts. It is a most important point that we, who hold the old faith, should be able to show that we have reason and common sense on our side.

Mr. H. C. DENT, C.E., F.L.S.—In confirmation of the remarks that have been made, not only did the ancients know how to obtain the bronze, but they knew the exact proportions now used, the bronze of the past having, at most, a difference of 2 or 3 per cent. in constitution.

Mr. R. J. HAMMOND.—I would call attention to the fact that man may be unacquainted with the arts and sciences and all that is included in the term "modern civilisation," and yet need not be a savage. I hold that such may have been the state of primeval man, a mental and moral child, thriving under the fostering care of God. If there is evidence of civilisation by evolution and of the degradation of man, have we not also some of civilisation by the Divine teaching and control?

Capt. F. PATER, F.G.S., &c. (Hon. Sec.)—Those who were in the Pacific Islands in bygone years know that the savages there seemed to have fallen into a thoroughly degraded state, even in islands which have since been found to contain traces of a former considerable degree of civilisation. We find much the same thing in North America. I may add that even now, in some parts of Scotland, there are people who live in caves and are very degraded—people whose progenitors must have been vastly superior in every way.

Mr. ALLEN, in conclusion, said :—I have not much to add. I have tried to call attention to a side of the question which, in my opinion, has been much neglected, but which is necessary *as a complement and supplement* to the Darwinian theory. I have relied largely upon quotations, because they represent facts as opposed to *theories*. Perhaps enough is not yet known to enable us to formulate any certain theory as to the origin of civilisation and the development of savagery ; but the man who accumulates facts is doing pioneer work upon which others can build a durable structure. That was Mr. Darwin's most valuable life-work and title to immortality in science. I cordially agree with Mr. Hammond's remarks, and thank the meeting for listening so patiently.

The meeting then adjourned.

ORDINARY MEETING, FEBRUARY 16, 1885.

D. HOWARD, Esq., F.I.C., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

MEMBER :—R. Tucker Pain, Esq., Woburn.

ASSOCIATES :—Rev. W. C. Barlow, B.A., London ; D. W. Ferguson, Esq., Ceylon ; Rev. S. C. Armour, M.A., Liverpool ; M. A. Branta, Ph.D., Zutphen ; D. McLaren, Esq., J.P., London ; H. Whiteside Williams, Esq., F.G.S., Solva.

The following paper was then read by Mr. H. CADMAN JONES, M.A., in the author's unavoidable absence :—

SOME THOUGHTS ON THE EVOLUTION OF RELIGIONS. By the Rev. W. R. BLACKETT, M.A.

THE Evolution of Religion is much too large a subject to be treated in a single paper. But a few stray thoughts on the Evolution of Religions may possibly be suggestive.

1. First, let us clearly grasp the distinction here referred to between religions and religion. Religions are the divers ideas and practices adopted by different peoples in respect of the Being or Beings whom they acknowledge as having supernatural influence over them. But religion, in the general sense, is something independent of all historical religions. Professor Max Müller remarks,—“If we say that it is religion which distinguishes man from the animal, we do not mean the Christian or the Jewish religion, but we mean a mental faculty ; that faculty which, independently of—nay, in spite of—sense and reason, enables man to apprehend the Infinite under different names and under varying disguises. Without that faculty no religion, not even the lowest worship of stocks and stones, would be possible.”*

* *Lectures on Science of Religion*, p. 17.

2. The distinction thus stated is true, but the statement invites criticism. The common usage of language hardly justifies us in defining religion as a faculty. Nor is this exactly the Professor's meaning, as appears from his remark, that without the faculty he refers to religion would be impossible. The faculty in exercise is religion, not the faculty itself. But upon what is the faculty exercised? Man is the subject of religion. What is its object? Or has it any object at all? I suppose most of us would maintain that there is a most decided objective element in religion,—in some religion at least,—and that religion in its highest sense is the conscious relation of man to God, or the inward life in relation to God as its environment.

3. In this sense, the question of the Evolution of Religion is a psychological question. Has the mind of man such powers or faculties as to enable it to work out the idea of God, and the idea of its own relation to Him, and to formulate rules and principles for the regulation of itself in that relation? It is difficult to understand how evolution can be supposed to accomplish this, unless we suppose the relation, or the consciousness of it, to be a mere delusion, a figment of the mind, having no distinct objective element whatever, but entirely furnished somehow by the working of the mind itself. The question whether religion has thus arisen by mere evolution from natural elements is surely not to be settled by simply begging it. Mr. Herbert Spencer thus opens his paper on "Religious Prospect and Retrospect": "The developing man has thoughts about existences which he regards as usually inaudible, intangible, invisible; and yet which he regards as operative upon him. What suggests this notion of agencies transcending perception? How do these ideas concerning the supernatural evolve out of ideas concerning the natural?"

4. Yes, but do they? That is the first question. And the way to investigate this question is surely not to begin with a hypothetical man in an undeveloped state, and assume that, having started in life without any religious ideas at all, he has gradually evolved such, in a way that is drawn from the inner consciousness of the investigator, not from facts. In this way it might be easy to show that religion is only built up of "such stuff as dreams are made of," and accordingly that it is certain to dissolve in time, and, "like the baseless fabric of a vision, leave not a wrack behind." But even the author of the Dream Theory of religion is fain to leave something, very substantial, of "a wrack behind." And those who have experience of religion bear witness plainly and

universally that it is made of sterner stuff than this. On such experience surely ought to be founded the investigation of the psychological question as to the reality of religion. And this method of investigation would bring out a very real objective element, demonstrated by very tangible proofs. This, however, has not yet been recognised as a matter of scientific knowledge.

5. We have at present to set before us the simply historical question of the actual course of religion in the world, and to examine it by historical methods. This question once settled might open the way for an inductive demonstration of the psychological question also. But we have to beware how we allow ourselves to be tempted to fill up the *lacunæ* of historical evidence by psychological speculation. Very curious conclusions are occasionally brought out in this way. Thus M. Reville asserts that "cannibalism, which is now restricted to a few of the savage tribes who have remained closest to the animal life, was once universal in our race."* What are the grounds of this conclusion, which is quite contrary to the idea of the most learned anthropologists? First, the historical fact, that "traces of the primitive sacrifice of human victims meet us everywhere." Secondly, the psychological theory that all primitive sacrifices "were originally suggested by the idea that the Divine Being, whatever it may have been—whether a natural object, an animal, or a creature analogous to man—liked what we liked, was pleased with what pleases us, and had the same tastes and proclivities as ours." This is a remarkable *bouleversement* of reasoning. It might perhaps be safer to argue that, as human sacrifices have been universal and cannibalism has not, the aim of sacrifices could not be merely to gratify supposed human tastes in the deities to whom they were offered. And thus we might be driven back to acknowledge, in regard to the origins of sacrifice, some of those "moral and metaphysical ideas" which M. Reville declares "really did not appear till much later." But the matter is here referred to simply as a protest against forming historical conclusions on psychological grounds.

6. Our question, then, is as to the Evolution of Religions, not of Religion. And this question is historical. What do we find to have been the actual course of the history of religions in the world? How has the religious faculty of man actually

* Hibbert, *Lectures on Religion in Mexico and Peru*, pp. 86-90. See also the Duke of Argyll, *Primeval Man*, p. 135.

conducted itself within the known region of history, and within the borderland that is dimly revealed by tradition, or more dimly still by philological analysis?

7. This is a vast field for investigation, and can by no means be said to have been fully worked as yet. But great advances have been made in the exploration of it. Not a few learned and laborious inquirers have for the last seventy years been engaged in digging out the remains of old religions from amid the *débris* of popular traditions, of sacred books in forgotten languages, and of those languages themselves in which curious relics of still older strata had become imbedded. The Qurán, the Tripitaka, the Zendavesta, the Vedas have been studied and analysed. The hieroglyphics of Egypt, the wedge-covered slabs and bricks of Nineveh and Babylon, the rock-inscriptions of Persia and of India have yielded up their secrets. The traditions of the Aztecs and the Zulus, the wild ideas and wilder practices of the Tartars, the Red Indians, and even the Australian aborigines, have been collected and compared, not without results. Mythologies, Greek, Keltic, Scandinavian, and Indian, have been drawn together, and have supplied much interesting information. The primitive Aryan culture has been pieced out from the scattered elements of the Aryan tongues, and attempts in the same direction have been made with the Semitic. Altogether, much has been done in following out the course that religions have generally taken, so far as their history can in any way be traced. A mass of facts has been accumulated, too great almost for any one man to become acquainted with, at least without risk of portions being distorted through unequal approximation to the point of view. The Aryan scholar may magnify Aryan characteristics, the Semitic may take a wrong view of non-Semitic religions, owing to his familiarity with Semitic modes of thought. Moreover, the conclusions of all these scholars need to be checked again and again, and modified by a general acquaintance with other branches of culture, and, last but not least, by common sense. On the whole, the sorting and classifying of the accumulated and accumulating materials for the science of religions is a matter which will require as much skill, as much patience, and more breadth of mind than the collecting of them has demanded. Meanwhile, the vast array of facts should daunt a little the boldness of conjecture. No man has any right to lay down his own theory as to the origin of religion as unquestionably the right one, until he has shown its agreement with the history of the various religions as now made known. The dense and far-reaching forest of historical facts bearing on religion

is having paths cut through it here and there. But along its borders is inscribed in large letters the warning, "Conjecturers, beware!"

8. Vistas, however, are opening up. Here and there, in spite of the trees, one can manage to see something of the forest. In a matter like this, generalisations are for the most part formed gradually, coming into view little by little, and only concatenated with each other by degrees. The first attempts at forming them are often wide of the mark, and corrections are naturally to be expected. It will not do, therefore, to shrink from attempting them lest they should prove to be incorrect. They may at least serve as helps to some one else in generalising more successfully. There are one or two generalisations which are now widely accepted. Others are only just coming into sight, and need to be stated cautiously.

9. The first to be mentioned is one on which there has been fierce discussion, now almost obsolete. It is, that there is religion of some sort everywhere amongst men. Against this, tribes have been triumphantly pointed to amongst whom no trace of worship had been discovered. More careful investigation has generally shown such tribes to be by no means in the atheistic condition imputed to them. But, even if here and there a godless tribe were found, it would affect the general fact that man is a God-fearing animal no more than does the existence of a large number of non-religious persons within the fold of every religion alike. It must not be taken for granted—it would need to be clearly proved—that the nations most nearly devoid of religion were those which had remained "nearest to the state of nature," or which had developed least. They might be those which have fallen furthest from the original condition. The Duke of Argyll has shown that there is no necessary connexion between the development of nations as concerns the industrial arts, and their *spiritual* development as concerns religion.* Even the existence, therefore, of very degraded tribes almost or altogether without the idea of God would afford no presumption that religion was a matter of development, growing *pari passu* with civilisation. But this only by the way.

10. The existence, however, of religion of some sort throughout the human race does prove decisively that man is a religious animal, that his mental constitution enables and impels him to seek for and live with God. If God were unknowable, yet man's nature cannot do without Him, but demands, seeks,

* *Primeval Man*, p. 132.

imagines if need be, something that may fill the place of God in his inward nature. This is sufficient proof, surely, not that man can "by searching find out God," but that man is meant to have God consciously as part of the environment in which he lives. There are thoughts, feelings, "changes" of divers kinds in man's mind and heart within, which bear witness to, and demand the knowledge of, something really existing in the environment without. This does not, of course, prove the existence of an objective revelation. But it does show the existence of a nature ready to respond to such a revelation, and to live by it if it be granted.

11. The second generalisation to be noticed is likewise one that may be put forth with some confidence, inasmuch as it is supported by high authority. It is thus alluded to by Mr. Collins, in a paper read before this Institute the year before last.* "The only natural law which the science of religion has forced upon my own conviction is, that man has exhibited a constant tendency to drop the spiritual out of religion while he may retain the material. Deterioration from the original truth seems to have been the natural order of growth in religions. It was certainly so in the religion of Israel. It has been certainly so in the history of Christianity."

12. The same law of deterioration in religion is frequently laid down by Professor Max Müller:—"If there is one thing which a comparative study of religions places in the clearest light, it is the inevitable decay to which every religion is exposed. It may seem almost like a truism that no religion can continue to be what it was during the lifetime of its founder and its first apostles. Yet it is but seldom borne in mind that without constant reformation,—i.e., without a constant return to its fountain-head,—every religion, even the most perfect, nay, the most perfect on account of its very perfection, more than others, suffers from its contact with the world, as the purest air suffers from the mere fact of its being breathed."†

13. Deterioration, then, and not improvement, is the law of religions. But deterioration how, and in what respect? Into this the same great authority gives us some insight in another place.‡ "There are two distinct tendencies to be observed in the growth of an ancient religion. There is, on the one side, the struggle of the mind against the material character of

* Vol. xviii. p. 203.

† *Chips from a German Workshop*, i. p. xxiii.

‡ *Lectures on Science of Religion*, p. 268.

language, a constant attempt to strip words of their coarse covering, and fit them by main force for the purposes of abstract thought. But there is, on the other side, a constant relapse from the spiritual into the material, and, strange to say, a predilection for the material sense instead of the spiritual. This action and reaction has been going on in the language of religion from the earliest times, and is at work even now." The learned philologist dwells upon the phenomena of language with a persistency that reminds one of the suggestion that "there is nothing like leather." But the fact stated as to language indicates a far deeper one, a psychological tendency which had been noticed long before, even by Saul of Tarsus.* Nearly the same idea lay at the root of Plato's comparison of the mind of man to a chariot with two horses, one tending upwards to the skies, the other grovelling earthward, so that the charioteer can only obtain momentary glimpses of the spiritual realities above the clouds, losing sight of them speedily among the mists of earth. It is, however, interesting to find the tendency detected in the psychological field by the spiritual Apostle and the intellectual philosopher confirmed and illustrated in the regions of philology and history. For this "predilection for the material instead of the spiritual" may be traced as one of the principles of the deterioration of religions in almost all the nations of the world. However we may account for it, the deterioration is a general fact, and religions do tend everywhere, not to rise to a higher level of intellectual, moral, and spiritual perfection, but to sink downwards into superstition ever more immoral and more stupid. It were easy to illustrate this from the history of all the ages.

14. A recent example may be cited. There is in Bengal a sect called Karttá Bhajás, "Worshippers of the Creator." The designation is a grand one, and indicates a doctrine in many respects originally noble. It took its rise early in the present century, from a man who had probably come under the influence of Christian missionary teaching. At the present time the practices of the sect are marked by no little superstition, and, if report speaks true, by the grossest immorality. The body of the sect has been thought to furnish ground in some degree prepared for missionary effort, but converts from its ranks have often brought with them habits of thought and conduct which have created no little scandal. Just the same tendency to degenerate is found in all the thousand-and-one

* Gal. v. 17.

sects which have arisen within the bosom of Hinduism, some of them with very noble principles, but none with such a moral antiseptic power as could preserve them from the grossest and most absurd corruptions. The character of an Indian sect must never be judged of from a few quotations from the writings or traditional sayings of its founder.

15. Hinduism itself has had a similar history. The religion of the Hindus of the present day is far inferior to the religion that appears in the Vedas, with which, indeed, it has very little in common, although it must be presumed to be its lineal descendant. The Vedas, again, show a deterioration in the more modern portions as compared with the more ancient. We may not, perhaps, be able fully to accept Canon Cook's idea, that the most ancient hymns of the Rig Veda contain indications of a primeval Monotheism which was only passing, not passed, away when they were first chanted by the Rishis.* Yet Professor Monier Williams also states that there are to be found plain proofs that Dyans, the God of the Bright Sky, had been originally worshipped as the Great Supreme.† But lower deities, and lower still successively, usurp the worship of the people, and, spite of the ever-recurring tendency to Henotheism, objects of worship are multiplied beyond all numbering. The mode, too, of worship becomes more and more debased, till at the present day the commonest emblem of Shiva—the object of the most widespread, if not the deepest reverence—is a thing which cannot be explained to ears polite.

16. Not that all Hindus are grovelling idolaters. Many of them are proud and self-satisfied philosophers—Panteists of the purest water. It is rather startling, on opening a conversation on religion with a village Brahman, to receive, as I have done, a reply like this:—"Oh yes,—God is everywhere, of course,—you are God, I am God, that cow is God." The practical outcome of notions like these, when thoroughly accepted, is a state in respect of religion hardly higher than that of the lowest fetish worshipper. If there is more intelligence, there is less reverence, or rather none. The distortion of the intellect has killed all real worship, and all real thought of God as well. The fact is that under the surface of most religions that are conjoined with any degree of culture there may generally be detected these two currents—the material and the philosophical. Both tend to deterioration, neither is likely to evolve anything higher. The intellectual proletariat sinks into spiritual barbarism, the intellectual aris-

* *Essays on Religion and Language.*

† *Indian Thought*, p. 11.

tocracy loses itself in a spiritual fog. This last result has been laid hold of by the modern agnostic, and propounded in the guise of a philosophical system. The last new phase of the philosophical Evolution of Religion is to find out that there is and can be no such thing.

17. If, now, history shows that deterioration has been the law of all religions among men, is it reasonable to suppose that in pre-historic times the opposite law prevailed? It can, of course, be supposed that the *acme* of religious evolution had been reached before history began, and that nothing but a waning phase has been visible since. But this would be pure supposition, and could only be adopted for the purpose of sustaining a previously-accepted theory. Experience points to nothing but deterioration as the general tendency manifested in the actual evolution of religions in the world.

18. But, if this be so, how happens it that any religion now exists in the world that is not altogether debased? This leads us to another generalisation which seems to me to hold good very widely if not universally. It is, that the Elevation of Religion takes place through Individuals. Particular men lay vigorous hold upon particular religious truths, and bring them into prominence, forcing them upon the attention and acceptance of men by their own personal energy in the grasp of them. Often they found new religions upon them, and sometimes devote their lives with heroic courage and endurance to the propagation of them. To say nothing of Christianity, which stands on a different footing, the Jews' religion rests upon Moses. Zoroaster is regarded as the founder of Parseism. Buddha originated the religion—if such it can be called—that has spread most widely in the world. Mohammed is the Prophet of Islam. And most of the countless sects that exist within all the greater religions have their names, because they have had their birth, from some particular person.

19. It is in the nature of things impossible to demonstrate that such also has been the origin of traditional religions. For their origin is pre-historic. Yet the traditions themselves in most cases point to one person, or a very few, as having given rise to the *cultus* which the nation has received. At all events this is often the case when the religion contains any really spiritual elements, though it may not be so when the change, being towards the material, may have been the result of popular depravation. Thus it is difficult to determine exactly the position of the Rishis with respect to the Veda. But the Hindus themselves regard them as much more than the composers of particulars hymns or groups of hymns. In the "Rámáyan" and other popular poems they are exalted to a position in the skies,

and they are widely venerated as recipients of divine revelation. And we can hardly doubt that Vasiashtha or Visvamisra had a good deal to do with the retaining or formulating those higher thoughts that ennoble the nature-worship of the Vedic songs. So, in Mexico also, the milder and more hopeful system that tempered the fierce and sanguinary religion of the Aztecs was connected with the name of a Being who, though regarded as divine, may perhaps, inasmuch as he had something of a history, be conjectured to have been a human teacher in the times gone by.* The same may probably have occurred in other traditional forms of religion. The one man elevates religion, the many corrupt and deprave it.

20. Now, how are we to explain this occurrence from time to time of high-souled leaders in religious thought, who are able by personal influence to raise the spiritual state of nations and generations? Are they merely the product of their age? It would be curious if a general tendency to sinking were to produce an occasional elevation. This would be a very abnormal kind of evolution. Not but that the character of the age has generally something to do with the formation of the character and opinions of religious innovators. They frequently retain something of the popular errors prevalent around them. And a reaction from prevailing absurdities or abuses often has some influence in bringing into prominence the truths they lay hold of and proclaim. But whence arises this reaction? And what gives rise to the intensity with which they grasp and preach their own special verities, often unpopular and strange to the multitudes around them? On this there may be many psychological conjectures, but the facts of history point in one direction only.

21. The men who have elevated religion have generally presented themselves, and been regarded by their followers, in one or other of two aspects. They have come forward either as Revealers or as Reformers. Or these two claims may be combined. Mohammed, for instance, on the one hand, declared that he was only going back beyond the modern corruptions of the dominant religion to its purer condition nearer to its source. There had existed in Eastern Syria from the second or third century the semi-Christian sect of the Elkesaites, who claimed to have returned to the original religion of Adam and Seth. It may be that Mohammed had taken a hint from these in his assertion that his religion was but the primeval one restored. But, if so, he, like other

* Reville, *Hibbert Lectures*.

religious leaders, was not content to repeat the lessons of his teachers. In order that the new-found views put forth by such men may impress others as they impress themselves, it is necessary in most cases that they should have the sanction not merely of hoar antiquity, but of direct revelation. It must be observed, however, that the appeal to antiquity involves an indirect claim to the support of revelation, since it is usually taken for granted that the first fathers of the race received from the Creator directions for His service. Yet this is seldom felt to be enough. Whether the felt intensity of conviction has really arisen from an objective revelation or not, perhaps the teacher himself is hardly able to judge. But, at all events, that intensity itself renders it impossible for him to profess to be a mere reproducer of tradition. What the Hindus call *Smriti*, "the remembered," the traditional, is always a very secondary authority in religion. *Sruti*, "the heard," that which comes from the divine voice itself, can alone be decisive of spiritual truth. At all events, in hardly any case do the originators of new religions claim to have thought out their ideas for themselves, by their own unaided powers. If they did make such a claim, their followers would not allow it, and the less so the more enthusiastically they adopted the new doctrine. We can hardly understand how Sakya Muni, who, to say the least of it, left God out of sight, could claim to have arrived at his new light by any other process than that of thought. But, to constitute him an authority, he was very soon elevated, if he did not elevate himself, to the position of a "Buddha," an incarnation of Knowledge itself.

22. Thus it appears that man does not and cannot believe in his own power of religious discovery. Shall we say that men are wrong in this, and that all the great and high religious thoughts that have ennobled large portions of the race have been, after all, the product merely of human intellect? If they were all delusions, they might well be so. But, if religious experience demonstrates a powerful and energising reality in them, the supposition is absurd. In any case, historical evidence of the elevation of religion by the mere widening thoughts of men in general is not forthcoming.

23. Again, the manner in which new ideas in religion are generally received is equally instructive. They are rejected by the many as new-fangled and therefore false. They are accepted by the discerning few because they commend themselves to their religious judgment and instincts. The many are stupid and unspiritual; the few have a mind and conscience open to higher truths. The many judge only by their

familiarity or otherwise with what they hear; the few have a receptiveness which, though it could not discover, can appreciate and accept the better things that are brought to their ears. Gradually the higher ideas prevail, leavening and elevating the masses by their own intrinsic force, till they become at last the common property of all. There is something in all men's minds which gives a purchase for higher truth to lift them to a higher spiritual level.

24. But, as surely as the ideas put forth by the spiritual leaders are accepted by the multitude, so surely are they corrupted. Spiritual terms are taken perversely in a material meaning, and spiritual thoughts vanish away, leaving nothing but material and often unmeaning forms behind. This process often amounts to a reversal of the doctrines propounded by the first teacher, whose name, nevertheless, continues to be venerated. Nay, he himself may be elevated into the place of the idols he had striven to abolish. Buddha, though he is supposed long since to have passed into Nirvána, has become an object of popular worship in most Buddhist countries. Much more rapidly does this corruption take place when the new religion comes into contact with older and more material worships. You may see in Buddhist temples the image of Buddha seated in the same glass-case between Shiva and Vishnu. And Mohammedanism, with all its intolerance, is mingled, in most countries, with innumerable fragments of idolatry. The shrines of its saints are in many cases but the successors of heathen temples, and are often more assiduously visited than the Musjid itself. But this corruption of the higher religion by the lower is familiar to all. It is only one instance of that general tendency to deterioration which we have seen to affect all religions among men.

25. The thoughts we have been passing in review are but fragmentary and tentative. But they seem in a general way to bear witness to the fact that the religious faculty in man is rather receptive of spiritual ideas than active in the formation of them. The tendency of the mind of the race is ever to the material, not to the spiritual. And yet the wants of man's soul are not satisfied with the material in religion. Man seems to suffer from an inability to hold fast God as the environment to which his inward life corresponds. He is continually dropping the spiritual connexion, and taking up something material in its place. Nevertheless, he is not content. He demands a real spiritual environment, and without it sinks into ever deeper degradation.

26. But, when spiritual ideas are set before him by those who form a religious aristocracy in the race, he can appreciate them,

and often is strongly moved by them, just because he wants them. Whence come these higher spiritual views of the things concerning the life towards God? There is certainly no proof that they are merely the result of evolution. There is nothing to show that the spiritual elevation in which they have their source is a product of the age in which they rise, and nothing more.

27. At all events, Religion, spiritual life, life with God for its environment, is a fact in nature, patent, certain, and widespread. Some men have it not. Some men have no appreciation for harmony, some have hardly any comprehension of geometry or arithmetic, some are colour-blind. Yet all these inward faculties are believed to correspond to outward facts. As to the origin of spiritual life, science may perhaps explain it when it has first explained the origin of physical life. What science has to do in each case at present is rather to trace the course of the river than to guess at the causes that produce the fountain.

THE CHAIRMAN (MR. DAVID HOWARD, F.I.C.).—We have, in the first place, to thank Mr. Blackett for his very suggestive essay on a point of great importance, one which, as it seems to me, requires the very careful attention of every one who really follows modern thought on the subject with which it deals. We use that unfortunate word "Evolution" in countless different meanings, and there would appear to be a serious danger that the employment of it—rightly in one sense—has led to its very inaccurate use in a different sense. I think that this essay deals with two different conceptions of the word "Evolution" as applied to religion. If we accept Mr. Herbert Spencer's theory—that man is naturally evolved from the ascidian, and therefore must have evolved his religion in the same way—that, as he has evolved his complex heart and all the infinite complexities of his physical formation, so has he evolved all the mysteries of his moral and spiritual nature. If we accept this theory, we shall be bound to explain the point which the author of the paper has put before us as to the universal tendency of religions to fall back—not to progress in any given direction, but rather to shew a continual straining upwards, and then a sinking away downwards. The usual method of explaining the existence of religion is to assume that those savages who have least of it represent the earliest stage of the human race, and therefore must represent the childhood of the human race. I do not think the study of dotage would be found a very successful mode of explaining the mind of a child; and to take the degraded races, which have fallen from a better state, as the representatives of the early progress of those races is a very unphilosophical process. The study of geology is better prosecuted in the quarry than among the stones of ancient ruins; and, surely, to study the

beginning of religion in its end is a singular perversion of ideas. I cannot conceive how any one, looking on the facts as they are—and I may say that this essay has put the facts very moderately as they appear to tell against the progress upwards of the human race in regard to religion—can really imagine that religion is a mere development of physical force evolved by the ordinary processes which are imagined by a particular school to govern evolution. Of course, there is a very different sense in which we use the word "Evolution." One might call it, more strictly, development. There is the question of the development of religion, which is a most interesting study. It is, however, one we can hardly deal with without regarding it in the light of revealed history; and, therefore, it hardly comes within our province to-night. But we cannot trace the source of the earlier dispensation without being struck with the fact that amid all the evil failure that marked their history there was a progress in the realisation of their religion among the Jews, of a kind which we do not notice in any other religion, for we do not find a progress upward rather than downward in any other religion. But, on the other hand, there is the point which the author of the paper puts most forcibly and which I think well worthy of careful thought. I cannot imagine any more powerful evidence for theism than the fact that there is that constant yearning for a higher and purer spiritual life which gives strength to all movements for reformation; and that yet, in spite of this, there is also the undoubted counter tendency, dragging the human soul downwards, which the author has so vividly put before us. We cannot trace the history of the past without being deeply struck with this, and without tracing the history of the past we cannot justly and wisely deal with the history of the present. I hope that some of those present, who may have studied the subject more profoundly than I have, will now give us the benefit of their views upon it. (Applause.)

Rev. F. A. WALKER, D.D., F.L.S.—I have only risen to say a few words with reference to one statement which has been alluded to in the interesting paper we have before us, that alluding to a tribe said to have no conception of religion at all. I believe this may be the case with reference to certain of the African races. I was lately in conversation with the Bishop of Maritzburg, and may state that, in the course of a very interesting drawing-room lecture which he gave with regard to the mode of dealing with the Zulus and the work in progress among them, he seemed to say that, so far from their fulfilling the popular conception, that "the heathen in his blindness bows down to wood and stone," there were, as a matter of fact, no idols among that nation at all. They have no conception of a Supreme Being; but at the same time they are very superstitious, and in seasons of drought they give all their cattle to the rain-makers, all they believe as to a future state being that the spirits of their deceased ancestors entered the bodies of the numerous snakes in their land, and did so with the malignant intent to exercise their influence against mankind. I suppose it is pre-eminently true of the Semitic religions that they tend to degenerate. Many of them began with a worship of the most beautiful object in creation—the

sun. This was the case in Peru, in Persia, and in Egypt, and we have also the worship of the moon-god in Haran and in Ur of the Chaldees, and I suppose the countless bulls, and rams, and hawks, which we find at a later stage in Egypt, were partly derived from the fact of the sun passing through the different signs of the zodiac, and partly from being fierce and powerful animals, unconquerable as the sun in his strength, as also the lion, another sign of the zodiac, from the fierce heat of that luminary seeming to convey the idea of a lion in his resistless might. In this way, ideas such as these led not only to degeneration by the adoption of a multiplicity of gods, but to an embodiment of the various attributes of the one God in regard to His moral qualities, and His goodness and greatness also. (Applause.) As others will wish to take part in the discussion, I will say no more.

Rev. R. ABERCROMBIE.—I wish to be allowed to say a few words in regard to some statements on the second page of the paper. The author does not say that the evolution of religion implies that religion is purely subjective; but that "it is difficult to understand how evolution can be supposed to accomplish this, unless we suppose the relation, or the consciousness of it, to be mere delusion, a figment of the mind, having no distinct objective element whatever, but entirely furnished somehow by the working of the mind itself." We must all be aware that Herbert Spencer believes that there is an absolute, and the writer of the paper speaks of its being easy to show, by such views as those of Herbert Spencer, that religion will dissolve in time and "leave not a wrack behind," but he adds that "even the author of the Dream Theory of religion is fain to leave something very substantial of "a wrack behind." With reference to this question, we do not take it for granted that that which has been evolved by man's own powers is a figment. I would say that we look on geometry and algebra as the result of the development of man's powers; but, nevertheless, we do not look on the truths of geometry and algebra as merely subjective, we recognise that they hold good in reference to the outer world: therefore, if the mind of man does evolve thoughts which correspond to a reality, how can it be said that it is difficult to understand that the result of evolution in the case of religion can be any other than a figment of the mind? I think the second page of this paper requires some explanation; but I should like to add, that I very much appreciate the paper as a whole, and especially the great stress the writer lays on the idea of individualism in religion. (Hear, hear.)

R. J. HAMMOND, Esq.—With regard to the argument as to whether individuals carry on and develop religious thought in the human race, a proposition to which the author of the paper would appear to be adverse, the Chairman has told us that the Jewish religion is an exception to the view the writer has expressed. In the Jewish religion we have a succession of the prophets divinely raised up to carry onward the religious movement. The Jewish religion culminated in the Temple, and the Temple seems to be the model of the Christian Church. When the Apostle goes to Athens, he

seems to teach the doctrine that God had been preparing even the Greeks; and the paper leads us to the supposition that all those persons who came forward from time to time to carry on this divine movement were inspired. The Apostle says, "I found an altar with this inscription—'To the unknown God.'" Why should there be an altar to an unknown God at Athens if the people had not souls, yearning and crying out for something better, something deeper, something sweeter than the Greek mythology afforded them? They did not know who it was they needed; and the Apostle seems to play on this, for he tells them that He was the one he was going to introduce to them—the one they had been groping after—"the Divine Comforter." Then he says, "This ignorance God winked at," having brought His own Son into the world, and given all things into His hand, He would wink at their ignorance no longer, and therefore commanded "all men everywhere to repent." There certainly does seem to have been a progress from the first until now; and this, I suppose, may be regarded as a prophecy of the still further progress of the human race.

The CHAIRMAN.—With regard to the reference that has been made to the second page of the paper, I am sorry the author is not here to answer what has been said, because he could, undoubtedly, explain his own meaning best. I cannot help thinking that his meaning is given in the last sentence of the third paragraph, where, quoting Mr. Herbert Spencer, he says, "How do these ideas concerning the supernatural evolve out of ideas concerning the natural?" With regard to our mathematical conceptions, Helmholtz maintained most strongly that they are all absolute and actual experience, and he works it out, starting with what the mathematical conceptions of a being of two dimensions living on a sphere would be, and showing that a right line would not be the shortest and most direct as connecting two points, but that the arc of a great circle would be the shortest. I, for one, do not think we evolve mathematical truths out of our own minds at all, and the author certainly can hardly have meant that which has been ascribed to him as the evolution of religion. I think the apprehension of an objective reality can hardly be spoken of as the evolution of ideas of the supernatural from ideas concerning the natural. It is, in fact, difficult to know what Mr. Herbert Spencer means by that sentence; and this, by the way, is not an uncommon difficulty in regard to what he says. The sentence would seem to suggest that supernatural ideas have not an objective reality. If they have, it becomes a question of observation and knowledge which can hardly be accurately called evolution; it would rather be development. With regard to what has been said as to the progress of the Jews, I should be sorry if any one were to suppose I have overlooked the very steady degeneracy the Jews at times exhibited, showing, unfortunately, a stronger power in that direction than in an upward progress through the succession of the prophets. They certainly have shown deterioration to an extent that is perhaps all the more marked to us because of the height from which they fell. (Hear, hear.)

Rev. W. C. BARLOW, M.A.—I think that the account given in Genesis points to a fact which far more directly concerns the question dealt with by the paper before us, namely, that religion does not evolve itself by any natural, or mechanical, or other law, from the unaided human intelligence, but that there is within us the power of conceiving a Being—a consciousness of relationship to some power external to and higher than ourselves. To say nothing of “the voice of the Lord God walking in the garden in the cool of the day,” the very command in the beginning implied, by man’s being in the garden “to dress it and to keep it,” that there was a faculty in him for perceiving obligations. Here we have the very element of religion ; and the Book, if it is to be brought into the argument, indicates in its first pages that religion begins in revelation, but that it must be correlated to a faculty in man which can respond to that revelation. Of course, the next step in this backward argument would be to question the whole history that is beyond. I was glad to hear the Chairman correct an impression that seemed to have been created by some of his remarks. The history of the Jewish people, after we once find them in possession of written documents, is one of constant and strenuous endeavour on the part of the nation and Church as a whole to go further and further away from the truth, in agreement with the principle to which I think the author of the paper really did refer in his foot-note (Galatians v. 17) that there is that constant lusting of the flesh contrariwise to the spirit. I believe the whole history of the Jewish Church from the date of the written revelation is entirely of the character indicated by the author of the paper. But, then, we have to begin a good deal earlier than that with regard to the historical religion of the Jews, and we are confronted by recent discoveries with the fact of the so-called parallelism between certain early chapters in Genesis and certain Assyrian, Babylonian, and Chaldean legends. Does it not seem that these coincidences and differences strongly confirm the line of argument used by the essayist of this evening ? We find in Chaldea traces of legends every one of which shows marks of progress downwards. Man’s view of nature tends entirely to unify that which he observes, until he begins to view from the standpoint of his own moral and immoral tendencies. The Chaldean legends all manifest diversity. If those legends existed in anything like the form in which we find them at the date when communication may be supposed to have taken place between the Chaldeans and the fathers of the Jewish nation, then we have to account for this, that in the Jewish nation the legends were entirely free from anything of the monstrous character indicated by the name Heabini. It seems to me that the earliest writers of the Jewish legends show that they are the re-affirmation of an old revelation, and not by any means an evolution by the ancestors of the Semitic race, who, when left to themselves, only managed, out of the simplest elements of truth and thought which they once possessed, to create such legends as those which are now being picked out from the Assyrian tablets. (Hear, hear.)

The meeting was then adjourned.

THE AUTHOR'S REPLY.

A few words in explanation, with reference to the criticisms made at the meeting on my paper. I quite agree with the Chairman that the evolution of religion is one thing, its development another. There is a development of religion starting from Revelation. But, if the origin of religion be from evolution merely, then the subsequent development is only the continuation of the same process. It is *all* evolution "of ideas concerning the supernatural out of ideas concerning the natural," and there is no need to distinguish the different stages of the process.

Of course it is quite possible for ideas evolved out of the mind in the course of its intercourse with external things to have realities corresponding them, and so to be not a mere figment but actual knowledge. But if, as Mr. Herbert Spencer seems to maintain, the relation between the soul and that "absolute" which he concedes as existing be absolutely unknowable, then, however much the ideas evolved concerning the supernatural out of ideas concerning the natural may happen to correspond to realities, it is impossible to *know* that they do so, and they are for all practical purposes a figment merely. Moreover, Mr. Herbert Spencer, in the paper alluded to, proceeds to explode and even ridicule all the highest known ideas of the relation between the soul and God, as mere figments, and absurd ones too. So that we can do him at least but little injustice in the statement that a religion drawn from evolution merely is purely subjective and has no basis of reality. Personally, I hold that there is a relation, and a knowable one, between the spirit of man and God, and that consequently religious ideas corresponding to realities may be developed by experience, though, as a matter of fact, they are only truly and rightly developed by Revelation.—It might certainly seem that all those individuals by whom religion has been really advanced have been inspired. But there is need of a distinction between what we may call *religious genius* and Inspiration. Every religious genius whom God has not made use of by inspiration to add to His revelation has made some mistake in his religious ideas, and caused some aberration in the development of religion. But these matters are, as I understand, beyond the scope of the Institute, and I meant merely to suggest them without stating them.

ORDINARY MEETING, MARCH 16, 1885.

D. HOWARD, Esq., F.I.C., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

ASSOCIATES:—Rev. C. B. Bowles, Tunbridge Wells; Rev. S. Bowers, A.M., Ph.D., United States; Rev. J. C. Caldwell, D.D., United States; C. A. Barclay, Esq., F.R.G.S., Folkestone; W. Lester, Esq., J.P., F.G.S., F.C.S., Wrexham; J. Spriggs, Esq., F.S.S., Market Harborough.

HON. LOCAL SEC.—W. Lester, Esq., J.P., F.G.S., F.C.S., Wrexham.

*ON THE RELATION OF FOSSIL BOTANY
TO THEORIES OF EVOLUTION.* By W. P. JAMES,
Esq., F.L.S.

1. **W**HEREVER the word Evolution comes in, it is well to begin with stating in what sense it is used. For the present purpose it will be limited to its proper biological meaning, for it is only in the province of life that it can be considered as anything more than a hazy synonym for development. What process it can possibly express in the inorganic world I am at a loss to conceive. But, as understood by Zoologists and Botanists, it is perfectly intelligible; to them it is equivalent to the Theory of Descent,—that is, to the hypothesis that the forms of animal and vegetable life which surround us have descended by modification from their predecessors in time. In itself this is a most interesting and fascinating question, and no thoughtful student of nature can

dream of answering it off-hand. It may be partially true or not, but the evidence at present available cannot be considered as warranting a verdict that will satisfy everybody. The solution, if solution there be, must lie in the fossil-bearing strata. If the record of those strata be accepted as hopelessly imperfect, it seems almost useless even to discuss a problem for which sufficient data are wanting. But it may be questioned whether the geological record can fairly be considered as uniformly imperfect,—at any rate, to such an extent as to preclude any inferences for or against Evolution. It is from this point of view that I propose briefly to set before the Institute the facts of Fossil Botany in their bearing upon the Theory of Descent.

2. *Divisions of the Vegetable Kingdom.*—But before entering upon the subject it will be useful briefly to indicate the principles upon which the larger groups or sub-kingdoms of the vegetable world are constituted. It would be rash to take for granted any general acquaintance with the subject, as Botany has always had less attraction for the outside public than her zoological sister; and this assertion may be extended to Fossil Botany. The extinct races of plants have no surprises for the untrained eye so great as the monstrous Ichthyosaurus or the weird Pterodactyl, no series of forms so splendid as the long array of Ammonites and Encrinites. Some acquaintance with insignificant plants still living is required before the mind grasps the meaning of Club-mosses and Horse-tails, which reached the stature of forest trees, or understands that in their way they are as surprising as the giant Sloth or the Mastodon.

Plants are divided, in the first place, into two vast series, those with and those without flowers,—Phanerogams and Cryptogams. Old and obvious as is this distinction, it is eminently natural. Not only does it still hold good, but is, if possible, only brought out into stronger relief by our increase of knowledge. A wide gulf still yawns between the seed-bearing Phanerogam and the spore-producing Cryptogam. The assertion that it is at all affected by modern research is at variance with obvious facts. True seeds, containing an embryo plant with rudimentary axis and appendages, are strictly confined to Phanerogams, and are exclusively the result of the fertilisation of ovules by pollen-grains through the immediate agency of the air. On the other hand, fertilisation, properly so called, in Cryptogams invariably demands the presence of water, and never results in a seed. Again, the asexual spore so frequent in Cryptogams is totally absent from Phanerogams; in the fern, for instance, it is the antherozoids of the prothallus

and not the spores of the mature plant which correspond to pollen-grains. Even in the *Selaginella*, which has sexual differentiation in its microspores and macrospores, the microspores give origin still to true antherozoids requiring the intervention of water. Apart, then, from the valid mark involved in the distinction between Flowering and Flowerless plants, Phanerogams and Cryptogams may also be accurately described as air-fertilised and water-fertilised, in doing which we indicate a gap which no theory can bridge over. But, when we have thus got our first great division of Cryptogams, we do not know what to do with it. It is, in fact, an unmanageable aggregate of groups separated from each other by such tremendous intervals as, for instance, that between the Diatom and the Tree-fern. The botanist is obliged to treat it as the zoologist has treated the cognate term Invertebrate, that is, to break it up into more natural series. It is a mere question of names whether these should be called sub-kingdoms or not. As to their independent value and wide divergence there is no difference of opinion. Provisionally we may establish three of these sub-kingdoms, the *Thallophytes*, *Muscineæ*, and *Pteridophytes*, or, speaking roughly, the Algal type, the Moss type, and the Fern type. First comes the *Thallophytes*, including the *Algæ*, *Fungi*, and *Lichens*, the *Characeæ* being considered as *Algæ* in deference to the preponderance of authority.

Perhaps no other division of plants includes such vast diversity in form, size, and mode of re-production. It links the minims of the vegetable world, the Diatoms, Micro-fungi, and *Oscillatoriaceæ*, with the huge kelp of the Pacific Ocean, one of the longest stems in the present epoch. But they all agree in consisting of cellular tissue to the exclusion of fibro-vascular bundles, in the absence, more or less complete, of a differentiation into root, stem, and leaf, and in the great complexity, with few exceptions, of their reproductive processes.

Those not acquainted with natural science and more familiar with mathematical methods may consider this a very vague definition. But this difficulty is inherent in the subject. Nature, or rather living nature, abhors hard-and-fast lines. She refuses to run into our moulds, and shuts her eyes to our neat systems of classification. With reference to plants in general, there is scarcely a single statement which can be affirmed of them all without exception. We can say little more of them collectively than that they live and grow. For the fungi prevent us from predicating of *all* plants that they feed upon inorganic materials, that they contain starch, that

they break up the carbon dioxide of the atmosphere by means of chlorophyll-bearing cells, and so on.

Instead of vainly striving to cramp nature in the bonds of logic let us recognise this excessive elasticity of living forms. The late Professor Harvey has made such excellent remarks on this subject in the introduction to a book, now become rare, *Manual of the British Marine Algae* (1849. Van Voorst), that I shall take the liberty of quoting them:—

“Whoever has paid the slightest attention to the classification of natural objects, whether plants or animals, must be aware that, if we desire to follow natural principles in forming our groups,—that is, to bring together such species as resemble each other in habits, properties, and structure,—it is a vain task to attempt to define, with absolute strictness, the classes into which we are forced to combine them. At least, no effort to effect this desirable object has yet been successful But it fortunately happens that these difficulties are much more formidable on paper than in the field. The search into structure and affinities among the works of creation is something like that after first principles. We can distinguish and analyse up to a certain point; there we are stopped by that invisible and intangible, but impassable veil, behind which the Creator hides his operations. At this point we must rest satisfied with differences which we can *see*, but which we cannot *know* or *define*” (pp. ix. and x. of Introduction).

The second great group of Cryptogams is the Moss alliance. Tiny as are most of its members, they generally possess a distinct stem and leaves, and are invariably separated from Thallophytes by what is known as an alternation of generations, that is, by the occurrence of one form of the plant producing *antheridia* and *archegonia*, and of a second form arising as a peculiar result of the fertilised *archegonium*, the spore-capsule, familiar to us in *Bryaceæ* as the elegant Urn-fruit. Morphologically, this fruit is, as it were, a graft on the mother plant, and constitutes a phenomenon so isolated as to give a high value in a systematic point of view to the *Muscineæ*. Dr. Goebel, in a recent monograph on the mosses (Schenk's *Handbuch der Botanik*, vol. ii. p. 401), says:—“We must accordingly be contented with affirming that the gulf between Mosses and Pteridophytes is the deepest that we know in the vegetable kingdom, and it is not made less by being bridged over by hypotheses and surmises.”

The third great group, the Pteridophytes or Fern type, is of immense importance from its prominence in geological history. It is best divided into three classes, formed

respectively by the Ferns and their allies, Club-mosses and their allies, and the isolated Horsetails, now reduced to a single genus. In this group first occurred forms of *terrestrial* vegetation, which would now be called trees. We must lay stress upon the word *terrestrial*, for no one can now tell what glorious and luxuriant algal forests may have grown in primeval seas, without leaving a trace behind them, except amorphous masses of graphite. The Pteridophytes are also known as the Vascular Cryptogams, in opposition to the two preceding groups, which may be called Cellular Cryptogams. They possess true roots and fibro-vascular bundles, and the capacity of taking on a woody structure. Dissimilar as the outward habit of a fern, a horsetail, and a club-moss may appear at first sight, they are all connected together by the character of their prothallus. This is a kind of nurse plant or preliminary stage, in which a cellular expansion arises from the germinating spore, and in time produces the *antheridia* and *archegonia*. From the fertilised *archegonium* springs the form which we call, in ordinary language, the fern or the horsetail, and this form, in its turn, gives rise exclusively to asexual spores. In the small group of Heterospores the extension and duration of the prothallus are so abbreviated that the two kinds of spores, the microspores and macrospores, approach in function very near to pollen-grains and ovules. But to the last antherozoids occur, and require water: a mark distinguishing the highest Heterospore from Phanerogams.

Advancing now to Flowering plants, we have the advantage of being able to appeal to common knowledge. Everybody has some notion of a flower and its parts. The sub-kingdom of Phanerogams is divided into two classes, of equal systematic importance, but very unequal in extent. Here, as in earlier instances, we must distinctly bear in mind that the vegetation of the present epoch is only a temporary phase of the development of plant-life. Palæontology teaches us that classes now small in extent were once more important, and it is only by taking a broad view of past as well as of present life that we understand the relative value of the higher groups. In natural as well as in political history the present has its roots in the past, and is now determining the future. It is thus with the two classes of Phanerogams, Gymnosperms and Angiosperms. If we considered only the actual state of affairs, the Gymnosperms would appear to be what they were considered in pre-geological times, a subordinate group. But, when we know that they date as far back as the Devonian beds, we see their importance in the great plan of creation. The Gymnosperms

include the Conifers, the Cycads, and *Gnetaceæ*. Their flower is a true flower, but of a very simple type: a perianth is nearly always wanting, the sexes are always separate, the floral axis is often a real shoot and sometimes even branched, and finally the ovules are not contained in an ovary. The woody stem, however, of the Conifers is of a higher type than anything we have yet met with, having annual rings of growth and a distinct bark. It is usually said to approach the dicotyledonous type; but, as it is incomparably the older, it would be more strictly correct to say that the dicotyledonous type represented by our oaks and elms is a more highly differentiated form of the gymnospermic. Lastly, we have the Angiosperms, in which the ovules are enclosed in an ovary. They are divided into Monocotyledons and Dicotyledons, and comprise all the familiar flowers, shrubs, and trees which surround us, and on which we need dwell no further.

3. *General Inference from Fossil Plants.*—The order in which we have taken these four groups is that of their respective simplicity, Thallophytes, Muscineæ, Vascular Cryptogams, Phanerogams. As far as the evidence of the rocks goes, it is also, on the whole, that of their first appearance in past time. To speak quite exactly, the remains have been found as follows:—Algæ are the earliest; Vascular Cryptogams then appear in company with Gymnosperms and a few Monocotyledons; then comes the culmination of the Gymnosperms in the Cycads; finally, the Dicotyledons emerge abruptly in the upper chalk. Fungi lichens and mosses are too soft to stand any chance of being preserved in the older rocks. So far then, as the record goes, it agrees with the natural arrangement given above. Now the Theory of Descent requires that the varied plants of the present epoch, trees, shrubs, and herbs, ferns, mosses, and seaweeds, should all alike be lineally descended from the algæ of the most remote age, and, moreover, ultimately from the simplest forms of the algæ, the *Oscillatoriaceæ*, which alone, as far as our knowledge goes, can live in hot water, and could, consequently, have flourished in the half-boiling ocean of the dim past. The rocks, accordingly, should present us with a series, more or less complete, of these supposed ancestors of existing plants. Is this the case? To this question there is only one answer. Had we to consider only the fossil plants of the rocks, so far as known, no one in his senses would have been led to such an hypothesis. It would never have suggested itself to a botanist. No transitional forms are known between Algæ and Mosses, between Mosses and Vascular Cryptogams, between Vascular Cryptogams and Phanerogams. Even if such links were found,

they would prove nothing as to their origin. The only fossil evidence that can prove that one species has been transmuted into another would be a vast number of intermediate forms *between two species*, shading off imperceptibly into one another. It is a matter of common knowledge that such a series is not yielded by the rocks. So tremendous is the force of this negative answer at first sight that it requires some very strong counter arguments to rebut it.

4. *Imperfection of the Record.*—As is well known, the evolutionist's reply is to dwell upon the undoubted imperfection of the record. He can, for instance, very fairly say that, as no mosses have been preserved before the chalk, a great series of intermediate links between algæ and mosses *may* have perished. Similar remarks apply to the lichens, fungi, and many other lowly plants. Who knows, he may say, what the lost pages of the great Stone book may have contained? Intermediate forms would naturally be humble, insignificant plants, and it is not surprising that they have not been preserved. There is something in this, and we would wish it to carry its full weight to the hearer's mind. Are we, then, to leave the question entirely open as far as fossil botany is concerned?

5. *Occasional Completeness of the Record.*—The best answer to this seems to be that, whilst admitting the general incompleteness of the fossil history of past life, we must take care not to exaggerate it. For we cannot deny that here and there, at any rate, we have isolated pages, to continue our metaphor, which are crowded with illustrations. One of these occurs in each of the three great divisions of geologic time: in the Kainozoic we have some singularly complete memorials of Miocene date; in the Mesozoic we find similar though less abundant representatives of the cretaceous land flora; and, finally, in the Palæozoic we have the confessedly rich remains of the coal measures. Surely, if it can be shown that each of these extinct floras is wonderfully illustrated in local strata, we shall be justified in drawing all the inferences we can from them. Three times the veil is withdrawn from the past, and three times we catch a glimpse of the character of the rich and beautiful vegetation then flourishing.

6. *Miocene Flora.*—In speaking of the Miocene flora it will not be necessary to repeat the information on the subject to be found in all the accessible books on geology. Every one who has read Lyell's *Principles*, or even the briefer *Student's Elements*, will remember how fascinating the subject is. It is impossible here to attempt to separate the various subdivisions of Miocene time; we must confine ourselves to the

general bearing of the whole epoch on Evolution so far as its plant-remains go. The most beautiful leaf-beds belong to the Upper Miocene, and are best seen at Oeningen, in the valley of the Rhine, between Constance and Schaffhausen. They have been explored by the late Professor Heer, whose noble work on the Tertiary Flora of Switzerland will form an imperishable monument to his name. At this spot there seems to have been a lake, probably fed by springs with water unusually charged with carbonate of lime. Along the margin of this lake a series of very fine marls were deposited, often as thinly laminated as the pages of a book. In these strata an astonishing number of leaves, fruits, and insects have been preserved. A small collection of them is to be seen at the British Museum, now in South Kensington. To give some idea of the completeness of the record for this particular epoch, it may be pointed out that of a kind of camphor-tree (*Prinos Lavateri*) distinct sprays are found with flowers, fruit, and leaves; that the well-known key-fruit of the maple abounds, together with countless leaves; that on some remains leaf-fungi can be detected just as they now are developed in autumn; and that the time of year when the deposit was made can often be inferred from the shoot being in its vernal or autumnal state, and from the ants having their wings or not. What, then, was the vegetation that surrounded this Swiss lake at a time before the Alps had undergone their last elevation? First of all, not one plant of the present Swiss flora has been found. Secondly, the vegetation was very rich in trees, and on the whole had a resemblance to that of Florida, Mexico, Australia, and Japan. The number of woody plants was very great for so small an area. About 180 are known. These include swamp cypresses, evergreen oaks, laurels, elms, maples, acacias, liquidambar, and seven kinds of palms, including one (*Sabal*) similar to that now growing in the valley of the Mississippi. On the surface of the lake floated water-lilies, around its margin were reeds and rushes. The ferns are precisely the same as our recent ones, only of a sub-tropical type, such as *Lygodium*, a climbing fern, and *Osmunda lignitum*. But it would be tedious to give anything like a complete list of the still-existing genera which are found in these strata. Every one who examines the remains must be forcibly struck by the extreme distinctness of the generic type; for, great as must be the interval which separates us from these successive Miocene floras, all the genera are obviously as distinct from each other then as now.

More than this, so great is the constancy of type in many cases that Professor Heer gives a list of plants in which

probably the same species have survived to our own times. He considers seventy-two plants as probably ancestral forms actually identical with those now living. The following are some of them :—

MIOCENE FORM.	MODERN FORM.
<i>Woodwardia Roessneria</i>	= <i>W. radicans</i> (a Madeira fern).
<i>Aspidium Escheri</i>	= <i>A. thelypteris</i> (a marsh fern).
<i>Isoetes Braunii</i>	= <i>I. lacustris</i> (common water-plant).
<i>Taxodium dubium</i>	= <i>T. distichum</i> (American swamp-cypress).
<i>Glyptostrobus europæus</i>	= <i>G. heterophyllus</i> (Chinese cypress).
<i>Sequoia Langsdorffii</i>	= <i>S. sempervirens</i> (redwood).
<i>Sparganium valdense</i>	= <i>S. ramosum</i> (common water-plant).
<i>Liquidambar europæum</i>	= <i>L. styracifluum</i> (American shrub).
<i>Populus mutabilis</i>	= <i>P. euphratica</i> (Asiatic poplar).
—— <i>balsamoides</i>	= <i>P. balsamifera</i> }
—— <i>latior</i>	= <i>P. monilifera</i> } American poplars.
<i>Salix varians</i>	= <i>S. fragilis</i> (common crack willow).
<i>Ulmus Braunii</i>	= <i>U. ciliata</i> (elm).
<i>Planera ungeri</i>	= <i>P. Richardi</i> (tree allied to the elms).
<i>Platanus aceroides</i>	= <i>P. occidentalis</i> (plane-tree).
<i>Laurus princeps</i>	= <i>L. canariensis</i> (laurel of Canary Islands).
<i>Hakea salicina</i>	= <i>H. saligna</i> (Australian proteaceous tree).
<i>Diospyros brachysepala</i>	= <i>D. lotus</i> (kind of ebony-tree).

Besides these his list includes also the direct ancestors of three species of maples, of the tulip-tree, and so on. This extraordinary permanence of generic, and possibly even of specific type, is strongly opposed to any theory of variation. If genera, and possibly species, have changed so little in so vast a time, there really is no room for the slow and secular transformation required by the Theory of Descent. Let no one under-rate the value of this kind of evidence founded on leaves and flowers. The microscope is now able to decide points of affinity in plants to an extent never dreamed of in the earlier days of palæontology. The cells of the epidermis, with their shape and arrangement, and the stomates which pierce it with their characteristic forms, are often sufficiently preserved in Miocene leaves to indicate the order, if not the genus, of a mere fragment.

But there is another point of view from which the persistence of these genera is very striking. They have outlived a most remarkable change in the climate of Spitzbergen and Greenland. Genera of plants are still living in the warm temperate zone which once flourished within the present Arctic circle. This is well known as one of the greatest puzzles in geology; but I am not now concerned with its solution. I am only pointing out that beeches, oaks, planes, poplars, and so on, are older than that extraordinary condition of our planet which allowed a vigorous growth of

trees to take place within 12° of the pole. All the Arctic Miocene plants agree entirely with those of the Miocene beds of Central Europe. But this even is not all. Many of the genera found in the Miocene flora go further back still. They meet us in the chalk, the earliest flora of Dicotyledons. Dr. Lesquereux gives, in the *Cretaceous Flora of the Western Territories* (vol. vi. of U. S. Geological Survey, 1874), amongst others the following genera of trees as then existing: the alder, the birch, the oak, the laurel, the magnolia, the plane-tree, the willow, the sassafras, the sequoia, the tulip-tree. With pardonable pride the eminent American palæo-botanist remarks upon the great antiquity of the indigenous glories of the American woods, the magnolia and the tulip-tree. He justly remarks,—“The magnolia, and its relative, the tulip-tree, are wonders of American nature quite as worthy admiration as the great Niagara or the mammoth trees of California” (*Tertiary Flora*, vol. vii. p. 247). But, after describing fragments of tulip-tree leaves from the cretaceous beds, he makes the following most valuable remarks (*Cretaceous Flora*, vol. vi. p. 124):—“*Liriodendron*, the tulip-tree, has in its characters, its distribution, and its life a great degree of affinity with magnolia. The American species is the only one known now in the vegetable world, and its habitat is strictly limited to this country. It does not ascend higher than the fortieth degree of latitude, except, perhaps, casually, like magnolia, under the protection of favourable local circumstances. The genus does not appear to have any disposition to modifications of its type, and to migrations. We have as yet scarcely any fossil remains of it in our Tertiary formations. In that of Europe, it is represented from Greenland to Italy by one species only. The leaves of different forms, described from the Dakota group as four species, may perhaps be referable to a single one, as the characters, especially the size, of the leaves may be local, and result from climatic circumstances. It has thus passed a solitary life. Even now, by the singular and exclusive form of its pale-green glossy leaves (*i.e.*, four-lobed and looking as if the fifth apical lobe had been cut off, apparently a unique outline); by its large cup-shaped yellow flowers, from which it has received its specific name; by its smooth, exactly cylindrical stem, gracefully bearing an oblong pyramidal head of branches, grouped with perfect symmetry, it stands widely apart from the other denizens of our forests as a beautiful stranger, or rather as a memorial monument of another vegetable world. Either considered in its whole or in its separate characters, the tulip-tree is a universal and constant subject of admiration and wonder. It could be named,—not the king, it is not strong

enough for that,—but the queen of our forests, if the magnolia was not there with it to dispute the prize of perfection by the still grander majesty of its stature, the larger size of its foliage, the elegance and the perfume of its flowers. Our sense of admiration for these noble trees is heightened still by the dignity of their ancient origin.”

Now we have heard a great deal lately about the variability of species. Whole books have been written to prove the very obvious proposition that plants and animals if placed under artificial conditions are likely to vary in an artificial manner. We have had enough of this one-sided collection of facts favourable to certain hypotheses. It is time also to say something about the permanence of type to be found in nature. That there is something stable and fixed amidst all the variation of living things is absolutely certain. To pass over species, it is undoubtedly true that many genera are extraordinarily stable, as we have seen to be the case with the maple, the oak, the tulip-tree, and so on, persisting from the chalk. But an illustration from the floras of distant lands in the present day will, perhaps, help us in another way to realise the astonishing constancy of some generic types. Suppose we take ship and get away as far as ever we can from our own island, we shall find ourselves at last amid the waste waters of the vast Pacific Ocean. Among these stormy waves rise almost at our antipodes the small islands known as Lord Auckland's group and Campbell's Island, visited by the present Sir J. Dalton Hooker during the Antarctic expedition of the *Erebus* and *Terror* under Sir James Ross, which lasted from 1839 to 1843. Lord Auckland's group lies in 50° 30' S. lat. and 160 E. long.; Campbell's Island in 52° 30' S. lat. and 169 E. long. If we consult the magnificent *Flora antarctica*, and gaze at the beautiful coloured portraits of the plants executed by the skilful hand of Mr. Fitch, we shall almost imagine ourselves landing upon these steep and desolate islands, formed of volcanic rock, “ever lashed by heavy swells and exposed to a succession of westerly gales.” Still, in spite of rain, and snow, and fog, these lonely spots produce a flora rich in beautiful plants, a fact attributed by Sir J. D. Hooker to the comparative mildness and uniformity of their oceanic climate. However, what we wish at present to call attention to is the constancy of generic type. Any novice in botany whilst exploring these lands would be able to name off-hand plant after plant as belonging to genera familiar to him in Great Britain. Nor would this be true only of these islets, but also of all the other fragments of Antarctic land, such as Kerguelen's Land, Falkland Islands, and so on.

We do not say that *most* of the genera are European, but in each island there are *some* genera identical with those of Europe. Our imaginary traveller would at once know the species of *Ranunculus* from their leaves, flowers, fruit, and general habit. He would find *Cardamine hirsuta*, var. *subcarnosa*, only differing from our common hairy Bitter Cress, to be found on any old walls, by its very fleshy leaves. He would see a *Geranium* (*microphyllum*), extremely like our *G. lucidum*, two or three kinds of *Epilobium* or willow-herb, two lovely kinds of scorpion-grass (*Myosotis*), all of which would be familiar to him in a moment as new forms of well-known types.

It does not require a botanist to detect them: any sharp, country-bred lad would say in a moment, "This is a buttercup, that is codlins-and-cream" (the provincial name of *Epilobium*), and so on. It would be wearisome to go through all the European genera that thus reappear in Antarctic lands. I will briefly add two barberries, a ragwort, a cudweed, our own dandelion identical in species, lovely gentians, a butterwort in the Falkland Islands scarcely to be distinguished from *Pinguicula lusitanica*, our own pale butterwort, a great many grasses, some ferns, very many mosses, fungi, and algæ.

This is merely introduced as a single instance of a phenomenon that must be taken into account, the extension of many genera through widely-separated areas, and their astonishing constancy to their type. Let this fact be remembered as well as those of the variability of species. We have, in reality, two series of facts in living nature, some pointing to change and some to persistence, and our task is to reconcile them. It is certainly singular that often where the species are most unsatisfactory, as in the willows, the genus is, on the contrary, eminently natural; and, as we know in this case, it is also a very ancient one, descended from the chalk. Again, where the genera are intricate, the order is wonderfully natural, as in the *Umbelliferae* and *Compositæ*. However, enough, perhaps, has been said about this subject, and we will proceed to the Chalk flora.

7. *Cretaceous Flora*. — We have already spoken of the antiquity of the genera of dicotyledonous trees which first occur in these beds. We will now confine ourselves to one single point,—their abrupt appearance. It is generally admitted that, as far as our knowledge goes, the Dicotyledons emerge suddenly in the upper chalk, without any previous hint of them in the preceding Jurassic beds, which were especially rich in cycads and ferns, and they occur, moreover, as representatives of the three great divisions,—*Apetalæ*,

Monopetalæ, and *Polypetalæ*. The first that we can find are, to use Dr. Carruthers' words, "not generalised types, but differentiated forms, which, during the intervening epochs, have not developed even into higher generic groups."

To take, for instance, the Dakota group in North America, among its 180 species, as yet known, only one may be doubtfully referred to the Cycads; there are only five Cryptogams, six Conifers, and two Monocotyledons; all the rest are Dicotyledons, distributed into genera, much as now; of *Apetalæ* it has *Amentaceæ*, *Myricaceæ*, *Platanæ*, *Salicineæ*; of *Gamopetalæ*, *Bicornes*, *Ebenaceæ*, &c.; of *Polypetalæ*, *Magnoliaceæ*, *Sapindaceæ*, *Menispermaceæ*, &c. As Dr. Lesquereux says (*Cretaceous Flora*, p. 38),—"it has representatives of all the classes of plants, without disproportion, in one degree or the other, as compared to what is considered the scale of the vegetable kingdom. This seems to prove a collateral development of different primitive types, and, therefore, the appearance at certain epochs of those original forms which, at each geological period, have changed the character of the vegetable world, and which do not have any connexion with antecedent types." Again, still more decidedly (p. 35), after remarking that it is easy to build up imaginary systems of derivation from supposed simple types, by mere deviations or multiplications of organs, he goes on:—"But until we know more we have to consider the facts. And the conclusion evidently forced, at least in considering the flora of the Dakota group, is that its disconnexion from ancient types is so wide that even the supposition of intermediate, unknown, extinct vegetable types fails to account for the origination of its peculiar characters."

So far as the evidence of the Upper Cretaceous Dicotyledonous remains goes, it is decidedly opposed to the theory of descent. It is opposed to it in two ways. First, by the sudden emergence of the class already differentiated into subgroups it irresistibly suggests some abrupt origin of that class, such as immediate creation. Secondly, by the proof of the persistence of generic types so complicated as that of the tulip-tree from that distant period to the present day without any apparent change, it negatives any theory which is built upon the indefinite variability of systematic characters.

8. *The Flora of the Coal Measures*.—We now come to the most fascinating of all the extinct floras, that of the Palæozoic Coal Measures. The imagination is wonderfully attracted by the picture which science calls up of these old-world forests. Stretching for hundreds of miles along the swampy margins of estuaries, and covering the surface of their low deltas, they

appear to have been uniform all over the world, even as near the pole as Spitzbergen. Club-mosses and horsetails were trees in bulk and stature, though ungainly to our eyes with their angular forked branching, their spiral rows of stiff leaves, and their grotesque fructification. Mingled with these interesting though unlovely exaggerations were the beautiful lace-like fronds of tree-ferns, as well as a thick carpet of the lowlier species, and also scattered Cycads and Conifers. No birds built their nests in this monotonous jungle, no bees or butterflies lighted up a world destitute of colour and fragrance. But life was, nevertheless, abundant in these thickets, though of an unattractive kind, molluscs and myriapods, and wood-boring beetles. Now, the first thing that strikes us in examining the fossil remains of this flora is the extraordinary abundance and perfection of the impressions of ferns. Their state of preservation is often marvellous. It should be remembered also by those who only see them in cabinets that those collected are but a fraction of those noticed by the observant naturalist. Very often the shale in which they lie buried is so brittle that the collector only catches a passing glimpse of a lovely impression before the matrix crumbles to pieces as he tries to grasp it. It seems impossible, in the face of this abundance of remains, to deny that at any rate we have here a fairly complete record of local floras. So far as it goes it can be trusted. As the date of the palæozoic coal measures must in any case be very remote, they evidently supply us with a crucial test for the Theory of Descent. If that theory were true, the lines of vegetable pedigree should be at that time visibly converging. For instance, the three great classes of Vascular Cryptogams ought to be far nearer to each other then than they are now. Is this the case? Notoriously the answer is in the negative. Ferns, horsetails, and club-mosses are not only not converging, but are, if anything, further removed from each other than now. The two latter groups then reached their culminating point both in the size of individuals, the number of genera, and the complexity of structure. The *Lepidodendrons* and *Sigillarias* had a kind of woody structure feebly represented in their present herbaceous representatives. So also had the huge *Calamites*, *Calamodendrons*, and *Equisetites*, which have now dwindled down to a solitary genus, *Equisetum*. The peculiar spores of many of the fossil genera are found in vast abundance, and proclaim unmistakably their affinity to the modern survivals.

The ferns still flourish, but at that period they were evidently of greater relative importance than now. At present about forty species grow in the British Islands, but

130 fossil species have been found in the coal shale in the same area. Dr. Carruthers also tells us that a group of ferns has entirely passed away with a stem-structure fundamentally different from any now in existence. All these distinctions are equally prominent in the still older Devonian remains. So far back as we can trace the three great groups of Vascular Cryptogams they move in parallel and not in converging lines. The importance of this fact is so enormous that it seems to dispose of the question for ever; for there is really not time enough left before the Devonian beds to allow a primitive cryptogamic form to vary into three such strongly-marked and highly-specialised groups of descendants. Then, again, as Lyell remarks, it is astonishing how little ferns have altered since their first appearance, so that possibly even the genus *Pteris* is a survival from the carboniferous age. If they have varied so little during such an enormous period of time, why should they be supposed to have varied immensely just before the commencement of that time? And is it not a singular fact that all the remains which would support the theory of the derivation of the three groups from an older form have been lost?

The same story is told by the other vegetable remains of the coal measures: thus the Conifers are represented by the *Taxineæ*, or Yew alliance, a highly-specialised form. For the present the opponent of the Theory of Descent may take up an impregnable position behind his fortress of coal.

9. *Do Synthetic Types prove Evolution?*—Synthetic types, *i. e.*, those which are supposed to combine the characteristics of separate orders or classes, are considered by many as a proof of Evolution. Let us bring this assumption to the test of fact. I suppose the Cycads are a synthetic type. They resemble ferns in the circinate vernation of the leaves and in the sorus-like aggregation of pollen-sacs; in their diœcious, entirely naked flowers, crowded into cones, they partly resemble Conifers and partly Equiseta. In the processes of germination they resemble the higher Vascular Cryptogams. In their general habit they are like Palms. Here, I imagine, we have what is usually called a synthetic type. Now, according to the Theory of Descent it ought to have been prior in time to the Ferns, Conifers, and Palms, the characteristics of which it combines. As a matter of fact it is later than Ferns and Conifers. We ought, according to theory, to trace a series of diverging forms starting from it. As a matter of fact, we find it an isolated group throughout all its existence. We see the first scattered indications of its coming

in the coal measures, but it is especially in the oolite and other mesozoic strata that it culminates, and then it dwindles away until the present epoch, when it still flourishes in about fifty species, distributed under seven genera. Such is the life history of a synthetic type, and it is no wonder that evolutionists say very little about it.

10. *Conclusion*.—No fossil botanist had a profounder knowledge of the vast Tertiary flora than Dr. Heer of Zurich. On such a subject as this I cannot close my paper better than with his striking remarks at the end of his fascinating book *On the Primeval World of Switzerland*:—

“The deeper we penetrate into the knowledge of nature the more thorough becomes our conviction that only the belief in an Almighty and All-wise Creator, who has made heaven and earth after an eternally-predetermined plan, can solve the riddle of nature as well as those of human life.”

NOTE.—The author must state his obligations throughout the paper to Mr. Carruthers' Presidential Address to the Geologists' Association, as reported in the *Geological Magazine*, 1876, p. 560.

Count Saporta's attempt to weaken the argument from the carboniferous flora is hardly successful; indeed, his chapter on Evolution in his interesting book on Fossil Plants is too obviously a *rechauffé* of an article in the *Revue des Deux Mondes*, and hardly does justice to the scientific eminence of that patient investigator of the Aix Cretaceous Flora.

THE CHAIRMAN (D. HOWARD, Esq., F.I.C.).—We have to thank Mr. James for his most interesting paper, which is well worthy of our careful attention. (Applause.) It would appear, from the course of his varied remarks, that in dealing with the whole question of evolution it is, first of all, necessary that we should make up our minds as to what we mean by “evolution.” If we simply mean that there is in nature a plan of development, we must, I think, accept that as a self-evident truth. In point of fact, the word “evolution” is often used with the same vagueness that is characteristic of the way in which we employ the word “affinity” in chemistry in order to express the tendency to combine, which is evidenced by two substances that are related as little as possible to

each other. In a similar way, the term "development" is frequently used to express almost anything in the world except that which, grammatically or logically, is meant by that word. But when we come to consider the question of development, with reference to what is commonly assumed to be the case—namely, that the differentiations of nature have taken place by a slow and gradual process continually going on at approximately the same rate, investigations such as those which have been conducted by Mr. James become invaluable as arguments for or against the evolution theory. The whole study of botany is most fascinating, and one cannot but wish that Mr. James had had time to have worked out some of the points he has touched upon more fully than he has been able to do within the limits of this paper. I may just allude to one feature which to me is very striking in the study of botany, and that is, the amazing development of structure evidenced in some of the elementary forms of plant life. A good many people know a mushroom when they see it; but how many are there who know anything of the life-history of that plant? Its apparently simple structure and spontaneous growth are familiar to all of us; but how many have the least knowledge of the elaboration of structure or the extraordinary complexity of the stages of development through which it goes? In a vague kind of way, we know something about a certain object which goes by the name of mushroom spawn; but very few of us know anything of the real bearings of that spawn on the developed plant, or of the different phases through which it has had to pass. And, if this be true in regard to so simple a form of plant life, with how much greater force does it apply to the more elaborate forms? I may say, also, that the fact which Mr. James has pointed out, that the extremely complex processes of reproduction which are noticed in plant life at the present day are to be found presenting exactly the same characteristics in the earliest forms of the great divisions of the natural orders of plants, as shown in the very earliest appearances they evidence in the record of the rocks, is one which it behoves those who believe in the theory of regular evolution to explain, before they call upon us to assume that that theory is proved. (Applause.) Here, in the plant world, we have not merely the great divisions of nature just as widely separated in the earliest appearances found in fossil remains as they are at the present time, and with no intermediate links, but we find special genera, just as distinct from the other genera as their descendants or present representatives are from the different genera which are nowadays found on the earth. For instance, we cannot for a moment doubt, when we regard the first appearance afforded us of the tulip-tree, that in it we recognise the same tulip-tree as now exists, just as we also recognise in the stupendous lizards of the past the same type of lizards we see now. No one doubts that the creatures whose fossil remains we find were lizards. Even the uncultivated countryman, or those not so learned as the countryman in objects of natural history, would recognise the essential characteristics of the early tulip-tree. Do any of us who grow roses know how impossible it is to classify roses? In this case we have a singularly plastic genus,

capable of cultivation into almost infinite varieties, and yet the result is always a rose. We never find a rose developing into anything other than a rose, and yet, within the limits of variation, the variety is almost infinite. If there were no strict lines within which nature is confined, why should not all species of plants be simply varieties of one original, such as we see in the case of the rose? and why should there not be intermediate links which are now absent? It is only by the familiar study of plants that we are able to appreciate the force of this argument; but the argument, in its main outlines, appears to me to be one which any person who knows anything of nature may readily follow, and one also which it would be well to pursue, not merely to the extent to which this paper carries it, but even further, in order that we may be the better able to understand the marvels of creation; for it is evident that nothing but a creative power could have caused the differentiations we see around us. If it be said of evolution that it has taken place very rapidly at one period, and very slowly at another,—that, in point of fact, it has proceeded by fits and starts,—we may very fairly exclaim, That is quite another matter; and here I would broadly say that, if this is what is meant, then we may assert that evolution is simply claimed as a form of creation which as much requires the exercise of a creative power as any other form of creation. It is impossible for us to consider in what forms creative energy can be exhibited, or to limit its possibilities; but such an evolution as this undoubtedly demands a creative energy just as much as is needed by any form of belief in creative power. In saying this, I must not be supposed to deny that, even if the gradual process of evolution were proved, it would just as much require creative energy to account for it as is needed by any other form of creative power. The result is that, do what they will, the evolutionists are utterly unable to escape from the necessity of a Creator; and, therefore, the question is not a vital one for the theist. I will conclude by saying that, in the interests of truth and sound knowledge, papers like this are invaluable as a means of bringing to book those modern theories which are very popularly expounded, but which it is found very difficult accurately to prove. (Applause.)

Captain FRANCIS PETRIE, F.G.S. (Hon. Secretary).—Before this discussion commences, I have to read two letters, their writers being unable to be present; the first is from Sir Richard Owen, K.C.B., F.R.S.

“Sheen Lodge, Richmond Park, East Sheen, *March* 14, 1885.

“DEAR SIR,—I have the honour to return my best respects and thanks to the Council of the Victoria Institute, and regret that my present state of health forbids me to quit the house.

“The ‘Unrevised Proof,’ which I now return, has enabled me to pass a most interesting and instructive hour with the accomplished author of the ‘Relations of Fossil Botany to the Theories of Evolution.’

“I much regret that I cannot listen to the Paper and to the Discussion it will occasion. I shall deem it a favour to have a copy, when issued.—Believe me, faithfully yours,

“Captain Francis Petrie.”

RICHARD OWEN.

The second communication is from J. Braxton Hicks, Esq., M.D., F.R.S., who would have been present but for a severe cold. He says :—

“The lines followed by the author of this paper seem to be excellent, and with the introductory remarks I quite agree. The great question of evolution is not yet settled ; far from it ; probably it never will be absolutely proved : at any rate, until it is so, opinions on it can only be formed on probabilities ; and the relative value of these can only be arrived at by examining facts bearing on the question, with the thoroughness and patience shown by the author of the *Origin of Species*. Till this is accomplished,—and it is a great work,—and till every point on either side, be carefully balanced, it will be considered that his conclusions have not been answered. The argument based on the imperfection of the geological records obviously cuts both ways ; like as it enables the evolutionist to escape from the demand for demonstration of the transitional forms, so it also enables his opponent to claim that the absence of any ancestor identical with existing species is no proof of its never having existed. And here the argument of Mr. James comes fairly in, and shows that, where the records of the past are copiously revealed, there is a persistence of species and genera, remarkable on the theory that a constant slow change is always occurring.—Most of those who have advocated the theory of evolution, have, so it appears to me, jumped to conclusions not warranted by the evidence ; and then, having treated possibilities as proved facts, have overlooked what can be said on the other side, being carried away by the enthusiasm engendered by the apparent squaring of the theory with the facts observed. y this and kindred actions a hasty and spurious philosophy has taken the place of the former painstaking inquiry after knowledge ; and thus true philosophy is discredited. Had all the work on this subject been brought forward as “contributions,” and not as final conclusions, we should have advanced sooner towards the solution of the question. To state, as some have done, that the subject is settled, and that all who dissent are the reverse of acute, shows an inadequate conception of the difficult problem before us.”

Mr. W. CARRUTHERS, F.R.S.—I have to express the pleasure with which I first read and have just listened to Mr. James's paper, in which I think he has very clearly stated the case he desires to establish. I have but little to offer in the shape of criticism, and still less by way of supplement. I accept, to a great extent, what Mr. James has put before us as a concise statement of the evidence to be derived from plants in relation to theories of evolution. There are, perhaps, one or two slips which I might correct, but they are not of more importance than typographical errors, and are, at the most, very slight. I think he has done well to insist on the permanence of generic, and, perhaps, even of specific types ; because this is what really lies at the root of the whole question. I have traced some species as far back as the glacial period—species that are now living on this globe, but which belong not only to highly-organised plants, but to the lower cellular plants, and about which there cannot be the slightest doubt. This, of course, demands a very long time indeed for the development—if they were developed—of the existent species ; but when we go back, as Mr. James has taken us, to the origin of the various types of plant life, and see that the dicotyledonous plants made their appearance, as far as we know—and, of course, we cannot

argue beyond the extent of our knowledge—in the upper cretaceous beds, that they then suddenly presented themselves in a large number of forms representing all the main sections of this division of the vegetable kingdom, and that their remains can all be referred to existing generic types, it seems to me to be utterly impossible that any explanation can be given that can bear out the theory of evolution by genetic descent. This remark is, I think, equally true with regard to the lower divisions. I think Mr. James has put the position he has taken very clearly in regard to the vascular cryptogams in the coal measures. That those three forms, so widely separated from each other, even in those early times, should have continued to exist and to maintain their differences of character down to the present time, is, I think, a fact which is strongly opposed to the evolution theory. I am, however, only expressing my general belief in the strength of Mr. James's arguments. I might, perhaps, object to the point he makes as to the synthetic types. For my own part, I am not acquainted with a single synthetic type in the vegetable kingdom. I do not know any plant that has been discovered in the rocks of the earth containing a synthetic structure including the characters of several groups of plants, now differentiated; and I am sure that this is not the case with the cycads, which, while they have an anomalous appearance in relation to their allies, are a distinctly-separate type of gymnosperms, with no affinity to the ferns on the one hand, or to the palms on the other. They began life as a group in the secondary strata, and fossils which have been referred by early observers to this group of plants have been shown to be not stems of cycads but of vascular cryptogams. They appeared to form a large portion of the flora of the Secondary period, and there were some types which have disappeared entirely and are not found at the present day. I would only, before sitting down, express my gratification at the clear way in which Mr. James has put the question before this Institute, and my conviction that all the data we have in connexion with fossil botany appear to me clearly to disprove, and certainly in no way whatever to support, the hypothesis of evolution by genetic descent. (Applause.)

MR. C. HASTINGS DENT, C.E., F.L.S.—I think that papers like the present are especially valuable as bringing forward some of the weak points of the theory of evolution. Although I have not done more than look into fossil botany, it is very closely allied with zoological studies, which have always had great interest for me. There is one point to which I should like to refer, namely, the sudden appearance of groups of families in the geological strata, which appear to form a powerful argument against the doctrine of evolution. It is, I think, particularly noteworthy when we find the representatives of the same genera existing in a similar condition at the present day. Professor Williamson stated in *Nature*, in the winter of 1881-82, that he thought it doubtful whether it was possible to make clear the process by which the evolution of phanerogams from cryptogams has been accomplished. Darwin, perhaps, would give two general types—one for phanerogams and

one for cryptogams. Here we have two types separated by a vast amount of time—two separate creations ; and it may be asked, if there are two, why not a hundred ? I would say a word as to the persistence of type, and another with regard to the persistence of species. In reference to the persistence of type, there is the small equisetum (*E. sylvaticum*)-occurring contiguous to or in the soil overlying the coal measures, and is found only in such localities, flowering in June and July. It is plentiful in the neighbourhood of Manchester, where it may be found growing in the cloughs and valleys of the coal district. Then, as to the persistence of species, there is the *Salix herbacea*, which I first found on the summit of Snowdon, and afterwards, on a visit to the Lake District, upon the tops of Mount Skiddaw and Scawfell Pike, though I failed to find it on Helvellyn. All these mountains are something over three thousand feet in height. It occurs to me that this plant is a survival from the glacial epoch, and that, as the temperature of the British Isles has increased, this little willow, which is the smallest known species, and only attains a height of two or three inches, gradually found its way from the increasingly warm low ground until it is now isolated on the tops of the highest peaks. A reference is made towards the end of section 6 of the paper to the Falkland Islands, which is specially interesting, as it is very likely a similar case to that which I have noticed with regard to the *Salix herbacea*, the ranunculus form being found in the Falklands, whereas in the Brazils no species of that genus have been discovered ; and I may mention that, owing to the enormous preponderance of water in the southern hemisphere, in the temperature of the latitudes there, 40 degrees south represent 50 degrees north. There is one question I should like to ask Mr. James ; and that is, what is his opinion as to the dispersion of plants, which he has not dealt with in this paper ?—I know it is a very difficult subject to enter upon, but it is one which might have given rise to some interesting remarks by way of debate ; whereas I venture to think that no one in this room could find a single subject of debate in this paper.—I should like to know his opinion on this matter, especially as I am not prepared to hold so dogmatic a belief on the question of dispersion from a single centre in regard to plant life as is the case in reference to the dispersion of the human race. Darwin says that the same forms could not be produced—or very probably would not be—by evolution from two different plants ; consequently I should like to know how Mr. James would presume the ranunculus appeared both in the Falkland and in the British Islands ? In conclusion, I may be allowed to add a few words to the quotation given by Mr. James from the book written by Dr. Heer, of Zurich :—“Let us still erect statues to men who have been useful to their fellow-creatures and have distinguished themselves by their genius, but let us not forget what we owe to Him who has placed marvels in each grain of sand, a world in every drop of water.”

MR. S. R. PATTISON, F.G.S.—I am very glad that no occasion is offered for anything in the shape of criticism on this paper, the only ground for

which would have been some omission of fact, or some slip in the reasoning of the author. I do not think that anything of this kind can be charged against the admirable essay to which we have listened, and I am pleased to find that the testimony of our great leader on this subject, Mr. Carruthers, confirms my own impression, as he has nothing to express but admiration. It seems to me that Mr. James has not only abolished the argument deduced from the synthetic form of plants, as it now stands, but that that argument is doubly abolished if, as Mr. Carruthers has said, there is no synthetic form at all; because, in that case, the very basis of the argument is removed. With regard to the permanence of genera, Mr. James has fought that point on every stage of the geological record, and has taken his stand on every platform on which vegetable life is found, the result being that he has shown, in the case of the plants to which he has referred, that they display an entire constancy and permanence from the earliest forms; and that this is not only true of genera, but, to a very great extent, of species also. This seems to me to be absolutely fatal to the dogma Mr. James has combated. Again, the burst of new life in the upper chalk also seems to me to be fatal to the evolution theory. I hold also that the doctrine of the imperfection of the geological record would not be maintained by any one who has at all familiarised himself with the evidences afforded by the coal measures and the shale which is found in contiguity with the coal, for no one can examine one of our numerous coal-pits without being convinced that it affords the fullest possible development of the flora of that particular epoch; and not only is this the case with regard to one coal working, but all round the world the same phenomena present themselves in a manner that must be accepted as quite conclusive. I need not dwell further upon the subject, and have only to add that I am very glad indeed to have had the advantage of hearing Mr. James read so able and interesting a paper. (Applause.)

Rev. F. A. WALKER, D.D., F.L.S.—With regard to the question of the permanence or persistence of types, I may state that there is a very interesting case exhibited in the Boulaq Museum which probably some of those now present may have seen, showing the permanence of types in plants, not in the shape of fossil remains, but in those of which we have the earliest historical knowledge. We are there enabled to see the crocus and the lotus, one or two species of moss, and two or three more plants that have been taken out of mummy-cases, and which date back three and probably four thousand years, side by side with specimens of the very same flowers recently gathered and dried in Cairo, the species and varieties of the crocus and lily being the same as are found at the present day—the crocus, as far as I can see, being identical with that which is found in the Campagna, and generally in the outskirts of Rome. I suppose the permanence of this type is to be attributed to the fact that it has always been a non-cultivated species. I may add, that growers in the neighbourhood of Cairo have tried to produce different species. The more I go about, the more am I struck with the

great similarity shown by the fossil remains found in England, and the plants growing in Egypt at the present day. The impressions of the leaves, and the leaves themselves, of the palms and magnolias that are dug up close to Bournemouth are just the same in appearance as those in Egypt now, and serve as evidence of a tropical climate at one time in our own land.

Mr. J. HASSELL.—I thank Mr. James for his interesting and instructive paper. For my own part, I do not claim to know much about fossil botany, but I have taught the young a little about the botany of the present day ; and I remember on one occasion drawing attention to a fossil form on the table, and remarking that the nervation of the dicotyledons was different from that of the monocotyledons, and that of the acotyledons different from either of the others, and a child present said, "That cannot be a very old thing, sir, for it is exactly like this leaf," at the same time showing a leaf she had in her hand, the leaf of a recent fern. The more we know of the structure of plants the better are we able to see that no possible means within themselves could have produced the differences that are observable, and, consequently, the more confidently can we take up a position against the fascinating doctrine of evolution. I think it very desirable that the marked distinctions of species, which Mr. James has shown to be presented even from the very earliest ages, should be brought prominently before the young, by their teachers. Those who believe in evolution take advantage of every occasion which presents itself to inculcate the rising generation with their views. Why, then, should not the believers in special creation do the same ?

Mr. W. P. JAMES, F.L.S.—I was much pleased to hear Mr. Carruthers say he does not believe in synthetic types of plants, and, if he were still present, I would explain to him that the last paragraph of my paper, headed, "Do Synthetic Types prove Evolution?" is written from an entirely neutral point of view. I do not say that I believe in synthetic types myself ; I merely put it hypothetically, and I am very glad to find that Mr. Carruthers believes the cycads are not a synthetic type. I have never seen them except in greenhouses, and have only taken what I have said of them from books ; but I think I may say that, if there were a synthetic type, one would imagine them to constitute such a type, intermediate between ferns, palms, and conifers. I think that many excellent geologists have been a little too rash in speaking of types as synthetic, where the evidence does not seem sufficient to justify the term. In reply to Mr. Dent, who asked me how the plants I have spoken of got into the South Pacific Sea, I have nothing to add to what I have already stated. That is a subject that does not belong to the question dealt with to-night ; but it is, nevertheless, one of great interest. The reason I mentioned the Auckland Islands is that they are as far from Great Britain as they well could be. It is one of the great puzzles in botany to account for the antarctic species. Sir Joseph Hooker said, when he first explored those islands, and before he joined the evolutionists,

that the remoteness of those parts of the world and their isolation from the nearest land precluded the idea of species having migrated there ; but since then, as he has become more or less of an evolutionist, I suppose he imagines a submerged continent along which the migration may have taken place. The question is, as I have said, a very puzzling one; for instance, how the little butterwort, which is a cold-climate plant, got across the tropics. Those who advocate a slow and gradual migration suppose that these plants went over the tops of the Andes ; but the difficulty still remains—how did they get to the islands in the Antarctic Sea ? The subject is a most interesting one, and those who are not botanists would find, in the great libraries to which they may belong or to which they have access, the *Flora Antarctica* well worthy of attention, as showing surprising constancy of genera, and as containing plates, coloured by Mr. Fitch, which are of astonishing beauty. I do not assert that all genera are constant; some, of course, are variable ; but, nevertheless, we have to account for the fact that others are so amazingly persistent ; and it should be remembered that, when we say a genus or species is constant, this involves a vast number of uniformities—thousands, in fact—down to the most minute points. (Hear, hear.) There is a plant called *Bidens tripartita*, found in the watercourses in the neighbourhood of London. If you take a specimen and strip off some of the florets that make up the composite flower, the smell of the receptacle at the top of the flower stalk will remind you at once of that of the dahlia, and here we have a very subtle bond of union indicated. Who would expect that this little English composite would show any affinity with a flower so different in appearance, and coming from America ? Mr. Hassell made a most interesting remark about a fern. He gave an instance in which a child had recognised at once the likeness between the fossil and the existing ferns, and I can testify to the accuracy of the child's statement. The portion of the coal measures with which I used to have acquaintance was in South Wales, and I have only spoken of what I have myself seen. I never made a collection of the fossil ferns, but they were very familiar to me as a boy, and I remember that there was a district in which the shale was very brittle, and we used in walking about to break a great many pieces, and expose the beautiful impressions, which, however, were too fragile to bear handling, and so were lost. With regard to the theory of descent, I would only say that what I contend against is the doctrine advocated by Haeckel, that we must assume that all animals and plants have been lineally derived from their lowest forms. Haeckel and others have attempted to draw up a genealogical scheme for the vegetable as well as for the animal kingdom, beginning in the former with the lowest algæ, or oscillatoriaceæ, now found in the hot springs. Of course, when we see what tremendous gaps there are in this genealogical system, we are satisfied at once as to the impossibility of making it complete, and all wiser botanists have given up the attempt. In a modified form, perhaps, many have held evolution to be just possible. We might, perhaps, imagine

the creation of a form from which, as a generic type, species may have been produced by modification ; but, after all, it is but a guess, and there can be no doubt that there are forcible arguments, especially those derived from the coal formation, against any theory of descent. The evolutionists know very well that this is about the strongest point against their doctrine that can be adduced, and it does not require much ability to put it clearly. (Applause.)

The meeting was then adjourned.

ORDINARY MEETING, MARCH 2, 1885.

W. N. WEST, ESQ. (HON. TREAS.) IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed.

WAS PRIMEVAL MAN A SAVAGE? By J. HASSELL,
Esq., A.K.C.Lond.

TO the question at the head of this paper an emphatic affirmative is given by many of the leading men of science in the present day. Professor Haeckel, for instance, says, "As the twentieth stage in the human pedigree, next to these tailed apes, we must rank the tailless man-like apes (*anthropoides*), under which name the most highly-developed catarrhines, those most nearly related to man, have been grouped. They originated from the tailed catarrhines by the loss of the tail, the partial loss of their hairy covering, and a further development of the brain. It is evident that no single one of these existing man-like apes is among the direct ancestors of the human race; they are all the last scattered remnants of an old catarrhine branch, once numerous, from which the human race has developed, as a special branch and in a special direction. Although man ranks next to this anthropoid family, from which he doubtless directly originated, yet the ape-men (*Pithe canthropi*) may be inserted here, as an important intermediate form between the two, and as the twenty-first state in our ancestral series."

The learned Professor goes on to say: "In the *Natural History of Creation*" (vol. ii. p. 293) "I have applied this name to the speechless primitive men who made their appearance in what is usually called the human form,

that is, having the general structure of men; but yet being destitute of one of the most important qualities of man, namely, articulate speech, as well as of the higher mental development connected with speech. The higher differentiation of the larynx and of the brain, occasioned by the latter, first gave rise to the true man."*

Passing from Germany, let us listen to the answer to the question as given by some of the leaders of scientific thought in England. What say the disciples of the late Charles Darwin? You ask us, say they, was primeval man a savage? We answer, of course he was; for "man is descended from a hairy quadruped furnished with a tail and pointed ears, probably arboreal in its habits, and an inhabitant of the old world. This creature, if its whole structure had been examined by a naturalist, would have been classed amongst the quadrumana, as surely as would the common, and still more ancient, progenitor of the old and new-world monkeys."†

Now, if what these men say be the truth, it is clear that, unless the particular family of the apes from which man descended had made some advance towards civilisation, while still in their apish condition, then man, as the direct descendant of the ape, must have commenced his career as an untutored savage, the son of a brute beast. But let us pass from German professors and English savants, and interrogate the inspired writer of the book of Genesis. What say you, Moses? Does man owe his origin as a man to the struggles of some ape-like creature to improve its condition? Did he commence his career as an untutored savage? Mark the answer which is given. "No!" an emphatic "No!" "For God said, Let us make man in our image, after our likeness." "And God created man in His image, in the image of God created He him, male and female created He them."

Let us now put the question to one of the heathen poets, Ovid. What say you, ancient sage? Was primeval man a savage? Here is his answer:—

"A creature of a more exalted kind
Was wanting yet, and then was man design'd:
Conscious of thought, of more capacious breast;
For empire form'd, and fit to rule the rest.
Thus, while the whole creatures downward bend,
Their sight to their earthly mother tend,
Man looks aloft, and with erected eyes
Beholds his own hereditary skies."

* *The Evolution of Man*, 1879, vol. ii. pp. 180-2.

† *Descent of Man*, Part II, ch. xxi.

Here, then, we have a direct antagonism between the sacred narrative and the dictum of modern thought—science so-called. The one tells us that man was *created*; the other asserts that he is simply a development, an improved descendant of some particular family of apes. The one declares that man was *created by God* as a distinct race; the other that he was evolved according to natural law, and that he can claim no higher origin than any other animal. The one says that *God made man in His own image*; the other asserts that he has a community of origin with the brutes. Which are we to accept as the truth? Are we to give up the Old Faith, and embrace the New, or keep to the old paths and refuse to walk in the new? As for ourselves, we have made up our minds that the “old is the better.” But, for the sake of others who may be halting between two thoughts, we propose to question the advocates of the new on the nature of the proofs that man has descended from the family of the apes. Here is their answer.

You ask us, say they, why we assert that man is a direct descendant of the anthropoid apes? “Because in his embryonic state he passes through all the intermediate stages between the lowest and highest members of the animal kingdom, and in his anatomical structure he is closely allied to the quadrumana.”

In reply to this, we beg to say that the first reason given is not conclusive. It is very probable that many of the supposed embryonic resemblances to the lower forms of animals are present more in the imagination of the observers than in fact; and, in the next place, the fact of the similarity of structure in man to the apes does not prove the identity of origin. When speaking on this subject, the Rev. Alexander Stewart well remarks: “To argue, however, that because there is physical similarity there must also be identity of being, is to proceed on the basis of a manifest fallacy. We might as well conclude that, because the bodies of two men are the same in kind, their moral character must also be identical. Have we not what is known in chemistry as isomorphous bodies,—bodies which are alike in form and similar in chemical constitution, yet different in their properties? The salts formed by these substances, with the same acid and similar proportions of the water of crystallisation, are identical in their form, and, when of the same colour, cannot be distinguished by the eye; magnesia and zinc sulphate may be thus compounded. In these isomorphous substances the identity of shape is so complete that they all possess the same crystalline form (octahe-

dron, eight sides). No scientist, however, will presume to say that they are identical in kind or in qualities; or that the one has been evolved from the other. Why, then, should we be expected to believe that, because physical resemblances exist more or less between man and the higher apes, he and they should therefore be one save only in the degree of development?"

And then, as to the second, it may fearlessly be asserted that, while man's physical nature may connect him with the mere animal creation of which he is a part, the last in order but the head of all, that nature is not, to use the expression of Archbishop Whately, his dominant, it is not even his stronger part; it is subordinated to and controlled by his moral and intellectual powers, the spiritual part is his guiding principle.

As a natural corollary of the assumption that man has descended from the anthropoid apes, it is asserted that he has existed on the earth for many thousands of years, and that, of necessity, he commenced his career as an untutored savage.

Such being the case, let us next examine the evidence adduced to prove man's great antiquity and evolution from the lower animals.

First. When did man appear on the earth? It may be as well at starting to say that we do not consider the date, 4004 B.C. of the margin of Genesis i. of any authority: it is only one of the many systems of chronology which have been adopted by which to measure the period which elapsed between Adam and Christ. Passing, therefore, outside the Bible, let us see what light may be thrown on the subject by early human history.

Out of all the various nations which either now exist or which have existed, and which have a written history, there are but few which can lay any claim to be called ancient; these are the Hebrews, the Assyrians, the Egyptians, the Hindoos, and the Chinese. Taking the last of these first, let us examine their records to see what light they throw on the subject. One of the historians of the Chinese Empire, Soe-ma-thsian, who lived 100 B.C., compiled, from every recognised authority, a work called *Sse-ki*, or historical memorials, which embraces the history of China from the year 2637 B.C. up to the commencement of the dynasty of Han in the second century before Christ. This work has been continued by the different dynasties, and forms a complete collection of the annals of the empire up to the termination of the Ming dynasty in 1643 A.D. It is known under the title

of Niam-eul-sse, or the twenty-two histories. The entire collection of the official annals from 2698 B.C. to 1645 A.D. comprise a period of 4343 years. Here, then, we have one of the most ancient histories of an ancient people, carrying us back to a period less than three thousand years before Christ.

Passing now to the Babylonian records, what evidence do we get of man's great antiquity? Certainly not very much. The clay tablets which have been discovered in the ruins of the tower of Belus are generally supposed to date from about 3750 B.C., and at this period of human history man was in a highly-civilised state, being learned in the arts of war and manufacture and in law.

Let us now pass on to the Hindoos, and here it will be well to note that Hindoo literature itself is almost without known dates, owing either to the peculiar organisation of the Hindoo mind or to the convulsions of Indian history: hence the various dates which have been assigned to the subject by different writers must be received with great caution.

The Vedas or sacred writings of India are undoubtedly very ancient. The most ancient of these documents is the Rig-Veda, which is probably the oldest literary document in existence. It is next to impossible to fix a date to this document. While some writers have claimed for it many thousands of years before the Christian era, others have been content with 1000 to 1200, while some have assigned it to a date as late as 800 or even 60 B.C. Thus, then, it is clear that no valid argument for a high antiquity for man can be drawn from the ancient writings of the Hindoos.

However much the various systems of chronology vary in length, none of them make the period from Christ to the commencement of human history more than 4,000 or 5,000 years, thus giving man an existence of somewhat less than 7,000 years. But this period is considered by many scientific men of the present day to be wholly insufficient, and so one pleads for 20,000 years as the human period, another wants 27,000, while a third asks for 100,000. Professor Haeckel maintains that man has existed on the earth for a very much longer than the longest of these periods, or all of them taken together, while the writer of an article in a London daily paper claims billions of years since man's first advent on this earth.

Of course, the chief evidence of man's antiquity produced by its advocates is drawn from pre-historic times, and the period of this is held to be of immense length.

But, before we give up the Bible history of man's advent on this earth and of his exalted primitive condition, we would ask the advocates of man's antiquity and former degradation for their proofs.

When thus questioned, this is what they say:—

1. A vast number of flint implements have been found in oaves and in certain gravel deposits of Europe, and from the very nature of these implements they must have been fashioned by the hands of man when he was in a state of savagery.

2. A large number of human remains have been found under the stalagmite deposits in the caverns of the limestone rocks both in England and on the Continent of Europe, and, since these stalagmite deposits must have required many thousands of years to form, the human remains which are found beneath them must be older than the period when these deposits first began to be laid down. Here, then, we have two premises from which the conclusions as to man's antiquity and former barbarism are drawn. If either of these premises can be shown to be false, then the conclusions drawn from them must of necessity be fallacious.

Let us, therefore, examine them.

And, first, as to the flint implements found in the drift. While we do not assert that none of these flint flakes were fashioned by some primitive race of men, we do say that many of them could have been produced by natural causes, such, for instance, as violent concussions which may have occurred when those great physical changes took place on the surface of the globe which resulted in the formation of the drift.

Some may even have been formed by the effects of sand drifts, such as have been known to have taken place a few years ago in some of the bays of New Zealand. Either or both of these causes are not at all improbable, and would account for the number of such flints that are found together, a number so great, be it remembered, that the ratio of lost axes to the savage populations must have been very great.

Secondly. As to the evidence drawn from the nature of the cave deposits, Mr. William Pengelly, in his lecture on Kent's Cavern, delivered at Manchester, December 18, 1872, when referring to the antiquity of the human relics found in that cavern, said, "Coming to the question of time, we have gone back some two thousand years at least,—that is the minimum, it may be more,—before we get through the black mould. We enter then the granular stalagmite, and we know from the nature of the case that that thickness of stalagmite

must indicate an enormous length of time, inasmuch as the stalagmitic floor cannot be formed faster than the limestone is dissolved overhead, and the solution of that limestone is due to the presence of carbonic acid, and there is no possibility, under existing conditions, of any other water entering that cavern than what falls on the hills as rain. I do not ask you to take the thickness of the stalagmite as a chronometer, but will tell you a fact. There is in one part of the cavern a high boss of stalagmite rising up from the floor. That boss betokens that its formation was comparatively very rapid. Take that rapid rate as the measure. There is on the boss an inscription:—‘Robert Hedges, of Ireland, Feb. 20, 1688.’ For 184 years the drip has been going on, and it has failed to obliterate that inscription. The film of stalagmite which has accreted on it is not more than the twentieth of an inch in thickness. Nearly 200 years for the twentieth of an inch, and you have 5 feet to account for! But whatever may have been the time necessary for the formation of the stalagmite, the cave-earth is older still. There is another and more ancient stalagmite, thicker still; below that there is another deposit older than all, and in that we find human implements.”

Now, what is the sum of these periods in the stalagmitic chronometer? Let us see: At starting, there are 184 years for 1-20th of an inch of the boss, or 3,680 years for one inch, and this + 60, the number of inches deposited, gives us no less a period than 220,811 years for the whole deposit. To this period must be added some thousands of years for the deposition of the *cave earth*, and then for the five feet of underlying stalagmite another 220,800 years. Then another layer of earth, and another layer of stalagmite, in some places 12 feet thick, which, at the same rate of deposit, would require about 528,820, and to this again must be added some thousands of years for the formation of the breccia, which lies at the bottom of all. Putting these periods together, we have 2,000 + 220,800 + (say) 2,000 + 528,820 + 2,000, or 976,420 years as the time since man first used this particular cavern.

It will at once be seen that the validity of the argument drawn from these deposits as to the antiquity of man stands upon the assumption that the rate of the deposition has been the same in all ages. Now, if the rate of deposit has been the same, the conditions must have been the same; but what proof is there that this has been the case? According to some authorities, we are led to conclude that Kent's Cavern has not

always been at the same elevation above the sea—that, in fact, at one time in its existence it may have been submerged. If so, then a much larger quantity of water may have percolated through its roof than there does at the present time; and, further, the amount of carbonate of lime held in suspension in the water may have been very much greater than that at the present time, and the condition favourable to the evaporation of the water, and so of the deposition of the lime, may have been different. In the first place, the amount of carbonic acid gas in the air may have been much greater; and, in the second place, the temperature of the earth or the water, or both, may have been higher than at the present time. If such were the case, there might have been a very rapid deposition instead of a very slow one. The specimen which I hand round to be examined is a deposition of carbonate of lime, which, in its thickest part, is $1\frac{1}{2}$ inch. Now, according to the estimate of Mr. Pengelly, if laid down in a cave, it would have required 5,520 years for its deposition. But, as a matter of fact, this particular piece was deposited in a few months. It is a deposit taken out of a boiler in a metropolitan factory, and was laid down in a few months.

It will be well here to give a few facts as to the rapid deposition of stalagmite in our country in modern times and under ordinary circumstances. Mr. John Curry, in an article in *Nature*, December 18, 1873, p. 122, referring to Mr. Wallace's review of Sir Charles Lyell's *Antiquity of Man*, when speaking of the opinions of the reviewer as to the great antiquity of man, based on the rate of stalagmitic deposit, says, "Some thirty years ago I procured a piece of lime deposit from a lead mine at Bottsburn, in the county of Durham. It measured about 18 inches in length, 10 inches in breadth, and fully $\frac{3}{4}$ inch thick. It was compact and crystalline, and showed distinct facets of crystals on its surface, over which the water was running. I had indisputable evidence that the deposit had taken place in fifteen years. The water from which it was produced issued from an adit driven in the little limestone, which is about 9 feet thick. After leaving this adit the water ran down the perpendicular side of a rise for some fathoms on to some rock of *débris* which was lying on the bottom of a hopper, whence it proceeded from the upper part of the hopper mouth, then perpendicularly down over two narrowish deals, which were set on edge and put across the mouth of the hopper to retain the worked material. It was from these

deals I obtained the specimen just described. On its under side the form of the deals was well defined; on the upper side the crystals were best developed where the stream was most active."

In accordance with the above rate of deposit,—namely, $\frac{1}{4}$ inch in fifteen years,—5 inches would require 100 years. M. Pengelly's rate would require 220,800,—4 feet 2 inches in 1,000 years, and 41 feet 8 inches in 10,000 years.

Thus, then, it will be seen that the premises laid down by Mr. Pengelly and others are so unreliable, and hence the conclusions drawn are equally unreliable. We think we are right when we say that the estimate formed of the age of man by the time taken to lay down the cave deposits is very misleading, and that over the assertion that man has existed on this earth for untold thousands of years must be written "unproven."

It is now time to pass to the consideration of the second part of our subject, namely, What was the condition of primeval man? If he was an improved ape, then, of course, he must have been an untutored savage. But, if he was a separate creation, then he could have commenced his career as an intelligent being, possessed of a certain amount of knowledge, and with faculties and powers capable of adding to that knowledge. A child, it may be, when compared with man of to-day, but a human child for all that, and not an improved monkey.

If man started on his journey as a modified ape, then the nearer we can get to his starting-point the clearer ought to be the evidence of his apish condition. Is it so? In order to answer this question, let us look at some of the relics which the so-called pre-historic man left behind him. On the supposition that the relics of what has been termed the "Stone Age" are the most ancient, then in the knives, spear-heads, hammers, &c., we have traces of art.

But does the possession of stone implements by a people prove that they are emerging out of a state of apish savagery? Stone implements are still used by some of the native tribes of America, and there can be no doubt that these peoples are anything but apish in their condition. The ancient mound-builders of South America used the same kind of material for their implements. Dr. Schliemann has laid bare five distinct periods in connexion with Trojan history, and in each of these are found human relics. In the most ancient—namely, in pre-historic—Troy, at a depth of 53 feet from the present surface, were found stone implements, polished

and chipped ; millstones, copper nails, pottery, bone implements, and terra-cotta discs.

In the next above, at 33 feet from the surface, the *Homeric Troy*, destroyed by the Greeks about 1300 B.C., implements and weapons of copper, bronze, and stone ; pottery, fine gold, jewelry, and gold and silver vessels.

In the third from the rock, at 23 feet from the surface, relics of a barbarian people who occupied the site of Troy, rude stone implements and pottery.

In the fourth from the rock, at 13 ft. from the surface, the relics of a second barbarian people were found. Here very coarse pottery implements of copper and bronze, stone knives and saws, were obtained.

In the fifth, at 6 ft. 6 in. from the surface, the Greek Ilium, various works of art were found. Here, then, we have a succession of the Stone Age from an early to one of comparatively high civilisation. Again, there are many evidences of skill in the pre-historic man. Thus, in the Dordogne caves, were found drawings done on bone and stone. In some cases there is even an attempt at shading. Among other examples found was a cylindrical piece of reindeer horn, found at La Madelaine, on which are carved two outlines of fish, one on each side. The representation of the animal is so accurate that even the lateral line of scales is marked. Another example is that of a spirited group of reindeer, drawn on the palmed tine of reindeer's horn.

Again, there is abundant evidence that the people of the so-called Bronze Age were acquainted with the art of smelting metals ; otherwise they could not have fabricated their implements of war and articles of daily life which they left behind them. But it may be asked, Is the metal of which these implements are made really bronze ? Dr. John Evans shall answer this question. At p. 421 of his *Ancient Bronze Implements of Great Britain*, he gives the result of the analysis of no less than thirty separate examples, taken from all parts of the kingdom, and they were in every case found to consist of true bronze—that is, of an alloy of copper and tin ; and the average amount of the latter metal was found to be about 10 per cent. Clearly, then, the metal of which the articles was made is true bronze. Then it may be suggested that the metal of which they were made was found ready for use. Let us see. There are no ores of this metal, and, although tin does sometimes occur in copper ores, it is chiefly as an oxide, the greater part of which, says Dr. Percy in his *Metallurgy*, p. 477, would pass into the slag by fusion, and

so would not produce bronze. But may not the ancient races have produced the bronze by smelting the ores of copper and tin? This has been held by some writers as the only answer to the question, How was the bronze produced? Dr. John Evans, when dealing with this question, says, "Though some bronzes may have been produced directly by smelting a mixture of copper and tin ores, the usual mode of making them was by treating fused crude copper with tine stone," p. 420; and then he adds the following important note:—"Dr. Percy, F.R.S.; and other practical metallurgists, have shown that this view is untenable." (See Lubbock, *Pre-historic Times*, p. 621.) There remains, therefore, the fact that the people who prepared the bronze—whoever they may have been—must have known both how to have reduced the ores of copper and tin to the metallic state, and have had some standard of weight by which to have mixed those metals in the proper proportion. Here, then, we have a clear evidence that at whatever period these people lived they possessed a very considerable amount of knowledge of metallurgy.

But this was not the only art which the men of the Bronze Age possessed. Sir John Lubbock, in his charming work of *Pre-historic Times*, pp. 49–51, gives an account of the opening of a tumulus near Ribe, in Jutland, in 1860, in which was found a stone coffin, 9 ft. 8 in. long and 2 ft. 2 in. broad. In the coffin were found various woollen garments, one of which was a shawl, 5 ft. long and 3 ft. 9 in. broad, and ornamented with a fringe. If this was a genuine find, then it proves that either the people of the Bronze Age in Jutland were considerably advanced in the knowledge of manufacture or were in communication with a people who were much more highly civilised than themselves and who did possess that knowledge.

Again, the ancient tribes which inhabited the Scioto Valley, Mississippi, constructed earthworks which were not only accurate squares and perfect circles, but were, in most cases, of corresponding dimensions, each square being 1,080 ft. a side, and the diameter of each of the larger and smaller circles a fraction over 1,700 ft. and 800 ft. respectively. "This," observes the author of the *Smithsonian Surveys*, "is a coincidence which could not possibly be accidental, and which must possess some significance. It certainly establishes the existence of some standard of measurement among the ancient people, if not the possession of some means of determining angles."

When speaking of these mound cities, Dr. Wilson, in his *Pre-historic Man*, p. 271, says, "It is no less important to note that

it establishes the use of instruments. A standard of measurement could not otherwise exist, still less be applied on a large scale in geometrical construction; and the very simplest instrument that we can conceive of constitutes no less certain evidence of a condition of intellectual development attained by this ancient people very different from anything achieved by the most advanced Indian tribe." Thus, taking the present state of the native tribes of America, and comparing them with the mound-builders, we have a clear case of degradation, not of evolution.

Then, again, these people were artists of no mean order. On their stone pipes found in their tumuli are carved the forms of most of the animals common to the valley. Each creature is represented in its characteristic structure and habits. For instance, one of the pipes is in the form of a goose's head cut in hard black stone. On looking at it from the back, the figure becomes a human skull.

Here, then, we have evidence of the possession of cutting tools. More than this, the animals whose forms are carved on the objects do not all belong to the region, but include some whose habitat is the South continent, such, for instance, as the opossum. This suggests either arts derived from a foreign source, and intercourse maintained with regions where the civilisation of ancient America attained its highest development; or else indicates the migration into the Northern continent of a race of ancient people from the central and southern parts of America, who brought with them the arts and models derived from animals familiar to their fathers in the original home of the race.

It may also be mentioned that the people of these buried cities were skilled in the art of making pottery, and were acquainted with the use of the potter's wheel. In a word, they were very far removed from the immediate descendants of apes.

In the next place, we have to ask the important question, What evidence is there that barbarism was man's original state, and that he raised himself by the exercise of his own faculties?

To help us to answer this question we must study the records of modern savage races. If the modern savage has made no progress towards civilisation, what evidence is there that the primitive races did? What say the travellers who have visited these races? Let us hear. Mr. Darwin, when speaking of the savages of *Tierra del Fuego*, says "that in one respect they resemble the brute animals, inasmuch as they

make no improvement. Their canoes, which are their most skilful work of art,—and a wretched canoe it is,—is exactly the same as 250 years ago.”

Again, the New Zealanders were visited by Tasman in 1642, and he left a record of their barbarous state. After a period of 127 years these people were visited again by Capt. Cook, and the account which he gives of the people entirely corresponds with that given by Tasman. A century and a quarter had wrought no change for the better. Nor had they made any advance towards civilisation when visited by the Rev. S. Marsden in 1814.

Take, again, the case of the natives of New Holland: when they were first visited they were found to subsist on wild roots, which they procured with great difficulty, and were often half starved, yet they never conceived the idea of procuring the roots at the proper season and planting them round their huts. They did not even do this after the settlers had done so. Even this most necessary thing was not invented by themselves.

If, then, man in his natural state, as far as we know, never has, and seems as if he never could, raise himself, the question arises, when and how did civilisation originate? Mark, *originate*, not how it was improved, and made perfect.

It must not be forgotten that the bodily organs and conditions of the ape are much better fitted to the wants of the animal than are those of man. The ape needs no artificial covering to protect it from the vicissitudes of the climate, and its food is procurable with the least possible trouble. Not so with man: he must make his covering and labour for his food.

Then, again, the instincts of the brutes are far above those of man. Archbishop Whately well remarks, “Let a quadruped be thrown into the water, and it swims naturally by the same motion as that of walking; but if man is immersed he is drowned unless he has *learned* to swim by an action quite different from that of walking.” Many people know from actual experience how very difficult it is to learn this particular art, and the extreme satisfaction which is felt when they are able to swim a few yards in deep water.

We think we are right when we say that, as we find things now, the first introduction of civilisation among savages is, and must be, by *man* in a more improved state. But, according to the position of the advocates of man’s original savagery, there was no man to do this. Their position is this. An ape; an improved ape; a man-like ape; another improved semi-ape; and then a savage man, who gradually improved himself,

and in the course of time the result is the highly-civilised race of to-day.

But against this theory we place the fact that everywhere we find that before a race is elevated there is a revelation made to it by another race superior to itself,—an instructor; and we think we are perfectly logical when we argue from the known present inability of a savage race to raise itself to the unknown past; the inability of apes to do the same, and therefore perfectly logical when we say that at first there must have been a *Divine Instructor*.

This was the opinion of the great Humboldt,—as good a name by the bye as Haeckel, and he says, “The important question has not yet been resolved whether that savage state which even in America is found in various gradations is to be looked upon as the dawning of a society about to come, or whether it is not rather the fading remains of one sinking amidst storms, overthrown and shattered by overwhelming catastrophes. To me the latter seems to be nearer the truth than the former.”

To the same effect are the words of President Smith of the College of New Jersey, N.S.,—as good a name as any of those who advocate the apish origin of man,—“Hardly is it possible that man, placed on the surface of the world in the midst of its forests and marshes, capable of reasoning indeed, but without having formed principles to direct its exercise, should have been able to preserve his existence unless he had received from his Creator along with his being some instructions concerning the employment of his faculties for procuring his subsistence and inventing the most necessary arts of life. Nature has furnished the inferior animals with many and powerful instincts to direct them in the choice of their food. But man must have been the most forlorn of all creatures, cast out as an orphan of nature, naked and helpless. He must have perished before he could have learned to supply his most immediate and urgent wants.” Of course, it is conceded that, given the possession of a certain degree of mental culture, man is able to improve himself.

We do not contend for a high state of what is called civilisation for primitive man. We know from the Bible records that it was otherwise. But what we contend for is this,—man started on his career with a certain amount of knowledge, that he began his existence as a *man* endowed with reason and conscience, and in conscious communication with his Maker, who instructed him in those things which he never could have found out for himself. And then, having been so endowed and so instructed, he was left to use his faculties

and add to his knowledge. So, while there may have been what may be called the infancy of civilisation, followed by its childhood and youth, leading up to its manhood; it was, however, an infancy of *human nature*, whose origin was from God and not from the unconscious efforts of unreasoning brutes. If otherwise, how did man become possessed of the knowledge of the art of producing fire? How came human language?

When speaking on the subject of human language, Professor Max Müller well says, "Language still bears the impress of the earliest thoughts of man, obliterated, it may be, buried under new thoughts, yet here and there still recoverable in their original outline. . . . I may here express my conviction that the science of language will yet enable us to withstand the extreme theories of the evolutionist, and draw a hard-and-fast line between spirit and matter, between man and brute." —*Selected Essays*, vol. i. p. 3.

Again, the Professor, in his *Science of Language*, pp. 13, 14, makes the following important statement:—"Now, however much the frontiers of the animal kingdom have been pushed forward, so that at one time the line of demarcation between animal and man seemed to depend on a mere fold in the brain, there is one barrier which no one has yet ventured to touch,—the barrier of language. Even those philosophers with whom *penser c'est sentir*, who reduce all thoughts to feelings, and maintain that we share the faculties which are the productive causes of thought in common with beasts, are bound to confess that as yet no race of animals has produced a language." Where, then, the difference between brute and man? What is it, then, that man can do, and of which we find no sign or rudiments in the whole brute world? I answer without hesitation: the one great barrier between man and brute is Language. Man speaks, and no brute has ever uttered a word. Language is our Rubicon, and no brute will dare to cross it. This is our matter-of-fact answer to those who think they discover the rudiments at least of all human faculties in apes, and who would fain keep open the possibility that man is only a more favoured beast, the triumphant conqueror in the primeval struggle for life. Language is something more palpable than a fold of the brain or an angle of the skull. It admits of no cavilling, and no process of natural selection will ever distil significant words out of the notes of birds or the cries of beasts."—*Science of Language*, p. 356.

In conclusion, let us ask,—If man be a mere improved ape, whence did he derive his knowledge of religion? It matters not how far we go back in the history of man, the

elements and roots of religion are formed with him as a part of his nature; and what are these elements? They are, to use the words of Professor Max Müller, "an intuition of God, a sense of human weakness and dependence, a belief in a Divine government of the world, a distinction between good and evil, and a hope of a better life. These are some of the natural elements of all religions. Though some time hidden, they rise again and again to their perfect form. Unless they had formed a part of the oldest dowsy of the human soul, religion would remain an impossibility."—*Selected Essays*, p. 4.

Thus, then, to the question, Was primeval man a savage, a descendant of a particular branch of the catarrhine apes? must be given an emphatic negative. And so, when the Christian is called upon by the advanced scientist of the present day to give up his old faith—his belief in the Divine origin and glorious future of the human race—and to embrace the new dogma—its evolution from the quadrumana—he should withhold his assent, and demand some better proofs than those at present offered that the teaching of Moses, of Christ, and of Paul, concerning the nature of man, is worthy only to be relegated to the keeping of the custodians of ancient relics.

THE CHAIRMAN (Mr. W. N. West) said he was sure all thanked Mr. Hassell for his very interesting paper, the discussion of which was now open to all present.

Mr. S. R. PATTISON, F.G.S., said it was scarcely needful that he should speak upon the subject, as he perfectly agreed with the Author, and had no objection to make to the paper and no observation which could add to the force of its reasoning. But there were other reasons which would, in his opinion, tend to the same conclusion as that to which the author had come. The relics that we have from language and customs as well as art make it appear to be utterly inexplicable that man arose from a previous savage condition; but the question was one which they might long debate, because there were savages and civilised people in all ages of the world. There were savages now, and progress was going on on the one hand, and degradation was going on on the other. Inasmuch as the matter was now regarded in two ways, if they threw one overboard, the evidence was so slight,—there was so little of it, that it was very easy to argue for conclusions which were at variance with the one they had thrown over. Hence it was difficult to arrive at finality on a subject like this, where there were no certain data, at least very little certain data to go upon. He thought the advocates of primitive savagery in the race had failed, and had singularly failed of late years, for recent discoveries strengthened the conclusion that the race must have been far more learned and accomplished in its origin than any savages with whose history we are acquainted. Setting aside the

Scriptures, they might conclude that there were very early states of civilisation. They all knew that the area of savage life in ancient times very greatly exceeded, and probably progressively exceeded, the area of civilised life. It was a very narrow stream of civilised life they had, through the Hebrews, as compared with the enormous outflow of barbarism that prevailed elsewhere. That made the discussion of the subject one on which a great deal might be said, for, in proportion as they paid attention to the outer circle, they got one side of the impression, or, if they paid attention to the inner circle, they got another side of the impression. He thought those who advocated the credibility of the Scripture narrative might intrench themselves very completely, and might make raids into the outer country. He thought, on that ground, the proposition might be maintained which had been brought before them that evening.

Rev. F. A. ALLEN, M.A., said he always felt a delicacy in going into a subject like this, because one could not help feeling that one trod on ground upon which it was for specialists to decide, notably when it involved geological evidence. He did not see why the author had brought in the remarks upon the antiquity of man before the real subject of his paper. He supposed he did it, thinking to strengthen his argument by presuming that it was not necessary to predicate such a vast series of years, if they did not admit that man gradually became a civilised being. He quite agreed with the conclusions Mr. Hassell had arrived at, and he thought that the leading scientific men of the day had come to the same conclusion, *i.e.*, that it was very difficult to decide on geological evidence as to the time man had been on the earth. Both the Scriptural and secular accounts seemed to agree that man did go on and make discoveries, and at a comparatively age in his history attained very great civilisation and refinement. He thought the latter part of the paper was very good and very cogent, and he quite agreed with it. With regard to the New Zealanders, it was true they did not make any progress, they were rather degenerating; it was said they were once in a more civilised state. The name of the man who introduced cannibalism had been handed down, and it only arose two or three centuries before the Europeans arrived there. The subject was a most interesting one; and he thought the practical lesson was, not to come to any final conclusions rashly, and be on our guard against the danger of falling into the bondage of the infallible professor.

Mr. C. HASTINGS DENT, C.E., F.L.S., in a few words, referred to a remark made by the Duke of Argyll in his recent work, that, if the number of years since the origin of man be taken as a multiplier in the process of elevation, it must be taken as a multiplier in the process of degradation. He (the speaker) thought that was not necessarily in the same ratio, because degradation went on much more rapidly than amelioration or elevation. As to the degradation of man, certainly, from the religious records, the inhabitants of Africa were the most ancient degraded nation. But they lived closer to the starting-point of the race than the inhabitants of South Africa, Tierra del

Fuego, or Australia. What, then, could we expect to be the condition of these far-distant people? After mentioning instances that had lately come under his notice in the East End of London of utter degradation of men who had moved in better spheres, Mr. Dent alluded to the way in which North and South America had originally received some of its aborigines by streams from the Turanian race to the North, and from South-east Asia to the South.

A MEMBER said we might regard primeval man as a child in mental development, and unacquainted with the arts and sciences; but that was a very different thing from his being morally a degraded savage.

Mr. R. W. DIBDIN had listened with great pleasure to Mr. Hassell, who had treated the subject with so much lucidity. With regard to degradation, Mr. Hassell has mentioned the New Zealanders, and said, that up to the time of Captain Cook no improvement had been noticed in the native races. A very interesting paper in reference to the Lake region of New Zealand had recently been read at the Geographical Society, and it stated that, so far from the races having improved, there had been a considerable process of degradation, and that it was now a difficult thing to find the original noble savage alluded to by Captain Cook: they found his degenerated descendants, but these were by no means specimens of men who were improving or who seemed to be rising in the scale. They had gone down physically and also morally. It appeared, however, that this deterioration seemed to be almost entirely confined to the males.

Mr. W. P. JAMES, F.L.S.—As to the great antiquity of the human race, when they saw how fast nations developed, and how swiftly Greece ran through her brilliant career, *à priori*, it seemed difficult she could have risen so fast, as we knew she did, when the greatness of Athens was confined to seventy years. He thought Mr. Hassell could safely say that the records of history might be brought within the 5,700 years. The whole question was, to his mind, most fascinating.

Captain FRANCIS PETRIE, F.G.S., said a scientific writer outside the Institute had held that the Author had no possible scientific evidence to go upon in taking up the question of the condition of primeval man. In making such a remark this writer, an admirer of Dr. Darwin, had forgotten that the question was raised by that eminent man, who, in many a page of the last edition of his *Descent of Man*, professed to give a full description of the manners, and customs, and domestic life of "primeval man."

Mr. HASSELL, in reply, thanked the Members present for the attention they had paid to his paper. He wished it to be distinctly understood that, while he did not agree with those who claimed countless thousands of years as the human period, he did not argue for the 4,004 years of Archbishop Usher as representing that period. Indeed, considering our present limited knowledge, he did not think a date could be properly assigned to the first chapter of the book of Genesis. As to the word "savage," he had used that word in the sense of wild, brutal, uncivilised, a dweller in the woods, and, with this definition of the word, he asked

and still asked, Was man a savage? He must have been if he came from an ape. He could not have been educated, nor tutored, and instructed, and therefore he must have been a savage. Putting together all the records of antiquity,—Babylonian, Assyrian, Chinese, Grecian, Roman,—they got only a limited period; a period, too, which in a remarkable manner corresponded to that of the Bible: whereas, according to the assumptions of the evolutionists, the period must be of immense length, as had been noticed in the early part of the paper. He maintained that the conclusions drawn respecting man's age were erroneous, because the premises laid down were false. As to what had been said respecting his remark, that man, as he first appeared on the earth, might perhaps be regarded as a child in his development, he would reply that the evolutionists do not admit that man came on the scene as a man at all, but as a man-like ape, then an ape-like man, and hence in no sense a human child. He had endeavoured in his paper to show that such an assertion of man's origin was a mere assumption, unsupported by proof. As for himself, he was not ashamed to say that he believed the Bible as a revelation from God to man, and that revelation declared that man was a separate creation; and he saw no reason why he should give up his faith in that revelation. He felt that, if he gave up his belief in the Bible account of man's creation, he must give up the New Testament, with its doctrine of the Atonement and Regeneration, for there could be no necessity for the Atonement if man had never offended, nor of Regeneration if he had never fallen, which he never could if he commenced his career as an improved ape.

The meeting was then adjourned.

REMARKS ON EVOLUTION AND DEVELOPMENT BY THE
REV. J. WHITE, M.A.

(*Head Master of the Royal Naval School, New Cross*).

It is supposed that evolution and development explain how nature took its present form and order, without any need for the action and intervention of a Creator ; but these theories of evolution and development only explain the course and manner of creation, but not how it commenced. Were the whole order and succession of existence traced without one missing link from the highest example of intellect in man to the lowest form of sentient existence in the amœba, and then further back still, from this dawn of feeling through vegetable existence, through inorganic matter to the first fortuitous concourse of atoms, from which, according to this hypothesis, grew out link by link the whole of being's endless chain, still the question would remain as unanswered, as unanswerable as ever : How did it begin ? Who started this infinite, this amazing order ? Who gave the atoms of matter these inconceivably wonderful powers and properties ? The point to which I wish to direct your attention is the existence of man. It is around this that the interest of the theory of development is accumulated with perhaps greatest intensity, and that the "missing link" has been most eagerly and curiously sought. Now, in discussing this point, I will refer to the writings of one of the ablest of Darwin's followers and fellow-workers, one who has claims even to be called the co-discoverer with him of the origin of species—I mean Mr. Alfred Russell Wallace. In the ample way in which Mr. Wallace disclaimed all share in the merit of that discovery and even the ability to rival the power of him he is ready to call his master, while Mr. Darwin, in his introduction and in the very first page of his work, speaks of Mr. Wallace, much his junior, as his fellow-labourer, who toiled with equal advance beside him, in this we have a noble example of scientific chivalry, of unselfish love of truth, that would do honour to the highest instance of Christian character ; and such examples, we may be happy and proud to know, are not rare among modern men of science. Also Mr. Wallace has been carrying on, in a manner that requires the highest philosophical and the best scientific instinct and knowledge, the further applications of Mr. Darwin's theory. In his *Geographical Distribution of Animals*, and his *Island Life*, we have examples of the inductive argument on the largest scale on which it could be attempted, and his works contain much that is fascinating to the general reader, as well as being full of scientific knowledge and discovery. For the case now in hand I am going to quote from a volume of his essays entitled *Contributions to the Theory of Natural Selection*, and particularly from the

last of them, that on *The Limits of Natural Selection as Applied to Man*. In this, to briefly summarise his argument, he shows, first, that the brain of savage man, including the remains of pre-historic races, is very much larger than it need be. In fact, so little difference is there between the size of the brain among the various races of men, that we might almost doubt whether the size of the brain is in any direct way an index of mental power, had we not the most conclusive evidence that it is so in the fact that, whenever an adult male European has a skull less than nineteen inches in circumference, or has less than sixty-five cubic inches of brain, he is invariably idiotic. Now, if we compare the brains of men and of anthropoid apes, it is found that if the brain or skull capacity in the latter is represented by ten, the proportion for savage man is twenty-six, and for civilised man thirty-two. Here is a great gap which requires many missing links to fill it up and unite the ends, and there is not a trace or hint of one. If man's brain is three times that of the animal nearest to him, how could the one be developed from the other? Where are the intermediate stages? Nature does not advance by leaps. But that is not all the difficulty, nor even the chief part of it. Natural selection can only account for the development of organs and powers that are useful and that are wanted and brought into action. Now, the brain of the savage, present or pre-historic, is almost entirely unused; he does not want the skull capacity that he possesses. To exercise the faculties and feelings of civilised man would be injurious to him, since they would to some extent interfere with the supremacy of those perceptive and animal faculties on which his very existence depends in the severe struggle for life he has to carry on against nature and his fellow-man. Natural selection, evolution, and development can only explain the existence of any organs by slow advance through use, benefit, and necessity; how, then, can they explain the large unused brain capacity of the savage? Here the theory wholly fails, in fact, demands another cause—calls for Him who “breathed into man's nostrils the breath of life, and man became a living soul.” Mr. Wallace pursues the same line of argument with regard to the absence of hairy covering in man, his erect position in walking, the marvellous power of his hands. None of these things were useful to man in his supposed primitive state, and therefore could not have been developed. All these are inexplicable on the theories of natural selection, evolution, and development; in fact, they are contradictions to it. He also discusses briefly the difficulties, which I have elsewhere considered, of the origin of man's moral sense and of any conscious existence; and the conclusion arrived at by this strictest scientific argument is that this theory (of Darwin's) “has the disadvantage of requiring the intervention of some distinct individual intelligence to aid in the production of what we can hardly avoid considering as the ultimate aim and outcome of all organised existence—intellectual, ever-advancing, spiritual man. It, therefore, implies that the great laws which govern the material universe were insufficient for his production, unless we consider that the controlling action of such higher intelligence is a

necessary part of these laws." It would be impossible now, and I think unnecessary, to pursue the subject farther in detail. But you will see that there are many gaps where not only is there room for the action of a Divine Being, but where such action is imperatively called for.

To one point more have I to advert, and that is the origin of civilisation. It is an old argument in defence of revealed religion, and one which affords a strong presumption that a revelation must have come to man, that no nation has ever been known to civilise itself. All that we can learn from the history of civilisation is that it has not been self-evolved in any land or race, but has been received from some other. Whole systems of civilisation have been lost and have perished, and races have relapsed into barbarism. But there is no example of any race already barbarous discovering or inventing any system of civilisation ; in fact, it would seem that, when man is placed at a certain standpoint of progress, he can go on ; but, if he has not gained that or has sunk below it, he always declines and sinks deeper into savagery. The impression will, doubtless, be strong upon the minds of many that development and evolution, which explain the origin and transmutation of species, can surely and more easily explain the dawn, the rise, the progress of civilisation, whose new developments we are ourselves every day witnessing. Now, on this point I will take the utterances, the most recent utterances, from an article in the *Nineteenth Century* of January, 1885, by Professor Max Müller. This testimony is of the ablest, for there is no more distinguished philologist in Europe, and the languages, the religions, the myths of histories of early races and primitive peoples have been his special study. The article to which I refer is entitled "The Savage." I will endeavour briefly to indicate its line of argument. The Professor states it thus : "One of these point-blank questions which has been addressed to me by several reviewers of my books is this, 'Tell us, do you hold that man began as a savage or not ?' To deny that man began as a savage, and that the most savage and degraded races now existing present us with the primeval type of man, seems to be the shibboleth of a certain school of thought, a school with which on many points I sympathise." After discussing at considerable length the difficulties of defining the meanings and limits of the words "savagery" and "civilisation," the writer adverts to the very strong arguments advanced by the Duke of Argyll in his book, *The Unity of Nature*, on geographical grounds, that present savages are degraded races, and are not specimens of primitive man ; and this argument he discusses from a philological point of view, and arrives at the conclusion that the languages of savages also show signs of degradation, and give evidence of having fallen from a higher and nobler condition. Without going further into this essay, I will just read in full its two concluding paragraphs : "Disappointing as it may sound, the fact must be faced, nevertheless, that our reasoning faculties, wonderful as they are, break down completely before all problems concerning the origin of things. We may imagine, we may believe anything we like about the first man, we can know absolutely nothing. If we trace him back

to a primeval cell, the primeval cell that could become a man is more mysterious by far than the man that was evolved from a cell. If we trace him back to a pro-anthropos, the pro-anthropos is more unintelligible to us than even the prot-anthropos would be. If we trace back the whole solar system to a rotating nebula, that wonderful nebula, which by evolution and revolution could become an inhabitable universe, is again far more mysterious than the universe itself. The lesson that there are limits to our knowledge is an old lesson; but it has to be taught again and again—'Canst thou by searching find out God? canst thou know the Almighty to perfection?'

REMARKS BY THE REV. W. GUEST, F.G.S.

It has for some time appeared to me that there is no more important and even crucial point in relation to the appearance of man upon earth than that which will be brought before your meeting. If there is a single historical record of savages, unaided by contact with higher influences, developing, *of themselves*, a cultured civilisation, this must be known. There must be a proof which falls within a human and historic period, and no argument of the nexus failing investigators through vastness of time, or the absence of observation, can avail here. The matter might be put in a syllogistic form :—

If the doctrine of development be true, according to what is understood by Darwinianism, man must have first appeared upon the globe in a rude, untaught, and uncivilised condition.

There is an absolute and total absence of historical evidence that rude and uncivilised men, left to themselves, have ever emerged out of a savage condition, and risen into the arts and refinements of civilisation.

Primitive man, therefore, could not have been a savage, as Darwinianism demands.

Of course, if there is a case of human beings, unaided by the contact of civilising influences, developing cultivation of mind and manners, we ought to admit all that the fact fairly carries. But, if there be not, it is disingenuous for any evolutionist to deny the necessary inference. It seems to me, therefore, that the Victoria Institute never drew nearer the very heart of this great controversy than when it demanded attention to this very issue.

ORDINARY MEETING, APRIL 20, 1885.

D. HOWARD, ESQ., F.I.C., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

ASSOCIATES :—The Rev. the Hon. C. Fielding, M.A., Shrewsbury ;
W. G. P. Gilbert, Esq., Portsmouth.

Also the presentation to the Library of a work entitled—
"The Autobiography of a Crystal." By Rev. C. D. Dunn.

*SOME CHARACTERISTICS OF PRIMITIVE
RELIGIONS.* By the Rev. R. COLLINS, M.A.

THE materialist's view of the growth of religion and ultimate belief, as now, in a God, perfect in holiness, knowledge, and power, has been concisely expressed by Mr. Herbert Spencer.* After stating his hypothesis, the "ghost-theory, that man first conceived the idea of the supernatural in his dreams" about the "double of the dead;" and after imagining that "in course of time are formed the conceptions of the great ghosts, or gods," which are, in the first instance, the "doubles of the more powerful men," he says:—"With advancing civilisation the divergence of the supernatural being from the natural being becomes more decided. There is nothing to check the gradual de-materialisation of the ghost and of the god; and this de-materialisation is insensibly furthered in the effort to reach consistent ideas of supernatural

* *Nineteenth Century*, No. 83, pp. 3 et seq.

action; the god ceases to be tangible, and later he ceases to be visible or audible. Along with this differentiation of physical attributes from those of humanity, there goes on more slowly the differentiation of mental attributes. The gods of the savage, represented as having intelligence scarcely, if at all, greater than that of the living man, are deluded with ease. Even the gods of the semi-civilised are deceived, make mistakes, repent of their plans; and only in course of time does there arise the conception of unlimited vision and universal knowledge. The emotional nature simultaneously undergoes a parallel transformation. The grosser passions, originally conspicuous and carefully ministered to by devotees, gradually fade, leaving only the passions less related to corporeal satisfactions; and eventually these, too, become partially dehumanised.

"These ascribed characters of deities are continually adapted and re-adapted to the needs of the social state. During the militant phase of activity, the chief god is conceived as holding insubordination the greatest crime, as implacable in anger, as merciless in punishment; and any alleged attributes of a milder kind occupy but small space in the social consciousness. But where militancy declines, and the harsh, despotic form of government appropriate to it is gradually qualified by the form appropriate to industrialism, the foreground of the religious consciousness is increasingly filled with those ascribed traits of the divine nature which are congruous with the ethics of peace; divine love, divine forgiveness, divine mercy, are now the characteristics enlarged upon.

"To perceive clearly the effects of mental progress and changing social life thus stated in the abstract, we must glance at them in the concrete. If, without foregone conclusions, we contemplate the traditions, records, and monuments of the Egyptians, we see that out of their primitive ideas of gods, brute or human, there were evolved spiritualised ideas of gods, and, finally, of a god; until the priesthoods of later times, repudiating the earlier ideas, described them as corruptions, being swayed by the universal tendency to regard the first state as the highest—a tendency traceable down to the theories of existing theologians and mythologists. Again, if, putting aside speculations, and not asking what historical value the *Iliad* may have, we take it simply as indicating the early Greek notion of Zeus, and compare this with the notion contained in the Platonic dialogues, we see that Greek civilisation had greatly modified (in the better minds, at least) the

purely anthropomorphic conception of him ; the lower human attributes being dropped and the higher ones transfigured. Similarly, if we contrast the Hebrew God described in primitive traditions, manlike in appearance, appetites, and emotions, with the Hebrew God as characterised by the prophets, then is shown a widening range of power along with a nature increasingly remote from that of man. And, on passing to the conceptions of him which are now entertained, we are made aware of a extreme transfiguration. By a convenient obliviousness, a Deity who in early times is represented as hardening men's hearts so that they may commit punishable acts, and as employing a lying spirit to deceive them, comes to be mostly thought of as an embodiment of virtues transcending the highest we can imagine.

"Thus, recognising the fact that in the primitive human mind there exists neither religious idea nor religious sentiment, we find that in the course of social evolution, and the evolution of intelligence accompanying it, there are generated both the ideas and sentiments which we distinguish as religious ; and that, through a process of causation clearly traceable, they traverse those stages which have brought them, among civilised races, to their present forms."

The quotation is long ; but it seems necessary, to emphasise the contrast that I venture to place against it.

Before, however, proceeding to my particular point, I would at once remark that Plato lived but a comparatively short time after a most remarkable wave of religious light had flashed across Asia and a great part of Europe, leaving in its trail such reformers as Gautama Buddha, Zoroaster, Confucius, Heraclitus of Ephesus, Pythagoras, and others, most of whom proclaimed, more or less distinctly, that they were only bringing back the purer faith of primitive men. They were trying to rekindle gleams of that "Golden Age" which ancient nations have uniformly placed in the past. To this renaissance Plato may have been more indebted than to the progress of what Mr. Spencer may understand by "Greek civilisation." The progress of civilisation has been nowhere uniform. The Zeus of the *Iliad* may represent the religious degradation of the time, compared with the religious teaching of Plato ; but was not that Zeus the descendant of Dyu, the "bright heavens," a conception, apparently, of what must have been a more enlightened age than, perhaps, even that of Plato ? And, with regard to the conception of the Hebrew and Christian God, it is an entire perversion of the truth to say that "we are aware of an extreme transfiguration,"

between the Book of Genesis and the Book of Revelation, "from the primitive traditions," which describe God as "manlike in appearance, appetites, and emotions." The Christian's God in Christ is, in one sense, still more anthropomorphic—he is "very man" as well as "very God"; but the Deity is ever the same, with Moses, David, Isaiah, St. Paul, St. John, though pictured in human thoughts, the almighty, omniscient, omnipotent Creator. And how otherwise could the attributes of the Deity be expressed to man, except by human pen? And how otherwise than by human thoughts, even be those thoughts inspired? Nor do the words of Moses as to the "hardening of Pharaoh's heart," nor those as to the permitting of a "lying spirit"—or, as it really is, "*the spirit*"—to influence Ahab, fasten upon those early times a less exalted idea of the "transcendent virtues" of the God of the Hebrews: they touch, indeed, upon the mystery of mysteries, the existence and power of evil; but they do but tell us that, in the words of the late Bishop Wordsworth, God at last "deals with wilful sinners according to their own devices." Pharaoh is recorded to have hardened his own heart seven times against God before it is said that God "hardened his heart," or, rather, "left his heart *bound* in its own already existing hardness;" Ahab had persistently hardened his heart also against the most evident and repeated warnings from God; and who shall say that it is not the very perfection of an all-wise government, or, it may be, the very necessity of perfect justice, thus ultimately to "deal with wilful sinners after their own devices?"

The special object of inquiry here, however, is as to the "fact recognised" by Mr. Herbert Spencer that, "in the primitive human mind there exists neither religious idea nor sentiment." Is it a "fact" really forcing itself upon our recognition? And, then, there is the further question, as to whether it is really a "fact" that both the ideas and sentiments, which we distinguish as religious, are generated as a result of "social evolution, and the evolution of intelligence accompanying it."

What are we to understand by "primitive man?" If he be the near descendant of the anthropoid ape, the "pitheccoid man," who is just developing a few shreds of intelligence, just dropping his hair, just widening his brow, just improving his features, just lengthening his thumbs, just shortening his tail, we can scarcely canvass his religious ideas and sentiments; probably they are non-existent, though he may, perhaps, dream dreams, and those even of "doubles" and "ghosts."

But, if by "primitive man" we are to understand "pre-historic" man, such a man as we could acknowledge to be a man, how are we to know that his intelligence, however he came by it, was such as necessarily to be devoid of both religious ideas and sentiments? It is very much in vogue to name the Fijian, the Karen, the Zulu, "primitive" men, a term that can only be correct on the assumption that they are true representatives, in their knowledge and habits, of the pre-historic man. But is this assumption correct? It certainly cannot be proved. There is nothing to prove that their remote ancestors were not more civilised than they. History teems with instances of decline in many phases of what is broadly called civilisation. Was there not, for instance, a decline, and that unto the death, in what may be called art-civilisation in England, between the times of the building of our ancient cathedrals and the building of the Peel churches? Was there a man in England at the beginning of the nineteenth century, who retained more than a tradition—and that, perhaps, a tradition that he did not care for—of the art-civilisation of the thirteenth and fourteenth centuries? A thousand points of civilisation have, in like manner, been lost in the histories of nations. And this is equally true of religion; as witness the condition of the Coptic Church in Egypt, the Church of St. Thomas in South India, or others nearer home. We cannot, therefore, safely measure the state of pre-historic man by the present state of so-called uncivilised tribes. It may be that they have declined in religious sentiment and perception; and that many of the tendencies which Mr. Herbert Spencer has taken note of have been the causes which have rather degraded and polluted a once pure fountain of religious idea and practice, than marked the steps of their development.

History testifies in numberless instances to such change from the nobler to the more ignoble: thus reversing the materialist view of religion. Thus, to take an example already touched upon, Zeus, quoted by Mr. Spencer as contributing to his view of the matter, did not begin his history as a man in a chariot, with a thunderbolt instead of an assegai in his hand, but he was the Dyu, or Dyaus, of an earlier stage of human worship, the "bright heaven," or "light," that being a primitive name for the supreme God; a name which still, under the form *dev*, or *div*, expresses the idea of *deity* to all India, and remains with ourselves in our word *divine*. The anthropomorphism, therefore, of the Homeric Zeus was not a primitive conception, but a degradation of the primitive.

Indeed, as Professor Max Müller points out,* Zeus was originally the supreme God, even to the Greeks; the ancient song of the Peleïades, at Dodona, was, "Zeus was, Zeus is, Zeus will be,"—a sentiment that expresses an idea utterly beyond anthropomorphism, and traceable to an earlier existence in the human mind than the anthropomorphic idea. As far back as we can go in the records of human thought, Dyaus is called, in the *Rig-Veda* (iv. 1, 10), "the Father, the Creator." Zeus, then, was originally "Light"; a religious idea which is not advanced upon by even St. John's "God is Light," nor by the Christian creed of to-day, that Christ is "Light of Light."

The Hindus are said to have some millions of gods. Their pantheon is so expansive as to be ready to accept a fresh candidate every day. Even the ghost of a dreaded Englishman has claimed a niche in the temple of the gods. Anthropomorphism to-day in India everywhere rules supreme. But that it was not so originally among the remote ancestors of the Hindu race we have very suggestive evidence. The early religious notions were not of "ghosts" and "doubles" of heroes. There is every evidence that the anthropomorphic idea grew out of the imperfections of human language, and the decay of religious integrity. The further back we go, the more evident becomes the fact, as just illustrated in the case of Zeus, that attributes, which modern thought has not improved upon, are predicated of the Deity.

Already in the time of the Vedic poets the religion of the Hindu was in one sense polytheistic; but the polytheism of the Hindu was very different from the later polytheism of the Greeks and Romans. The Vedic gods are not first ghosts and heroes, and then gods; but they are personifications of abstract ideas and powers of Nature; and are, perhaps, often wrongly interpreted by us on account of our previous education in Greek and Roman polytheistic thought. In many passages, where it might appear to us that different gods are named, it may be originally only that the appellation is different, as we ourselves call God the Infinite, the Almighty, the Creator, the Father, and even the "Heaven." †. The heroic period of Hindu religious cult was long subsequent to the Vedic era. The materialist might, no doubt, say that the personification of Nature's powers and phenomena is a later development of ghost-worship; but against this we

* *Lectures on the Science of Language*, vol. ii. p. 481.

† St. Luke xv. 21.

place history, the fact of the later development in India of heroic worship, the absence of anthropomorphism from the highest thoughts of the Vedic era, and the early grasp of the most exalted ideas of creation, supreme sovereignty of the Deity, infinitude, omniscience, omnipotence, justice, righteousness, and so forth. There is a very instructive passage in Professor Max Müller's *India, what can it teach us?* (pp. 199-201): speaking of the "large number of the so-called Devas, bright and sunny beings, or gods," he notices how "every act of nature, whether on the earth, or in the air, or in the highest heaven, is ascribed to their agency." "When we say *it* thunders, they said Indra thunders; when we say *it* rains, they said Parganya pours out his buckets; when we say *it* dawns, they said the beautiful Ushas appears like a dancer, displaying her splendour; when we say *it* grows dark, they said Sūrya unharnesses his steeds. The whole of nature was alive to the poets of the Veda, the presence of the gods was felt everywhere, and in that sentiment of the presence of the gods there was a germ of religious morality, sufficiently strong, it would seem, to restrain people from committing, as it were before the eyes of their gods, what they were ashamed to commit before the eyes of men. When speaking of Varuna, the old god of the sky, one poet says,* 'Varuna, the great lord of these worlds, sees as if he were here,' &c. This is a point worth careful study. "We know that there never was such a Deva, or god, or such a thing as Varuna. We know it is a mere name, meaning originally 'covering or all-embracing,' which was applied to the visible starry sky, and afterwards, by a process perfectly intelligible, developed into the name of a Being endowed with human and super-human qualities." "Only," Professor Max Müller goes on to say, "let us be careful in the use of that phrase, 'It is a mere name.' No name is a mere name. Every name was originally meant for something; only it often failed to express what it was meant to express, and thus became a weak or an empty name, or what we call 'a mere name.' So it was with these names of the Vedic gods. They were all meant to express the *Beyond*, the Invisible behind the Visible, the Infinite within the Finite, the Supernatural above the Natural, the Divine, omnipresent, and omnipotent. They failed in expressing what, by its very nature, must always remain inexpressible. But that Inexpressible itself remained, and, in spite of all these failures, it never succumbed, or

* *Atharva-Veda*, iv. 16.

vanished from the mind of the ancient thinkers and poets, but always called for new and better names—nay, calls for them even now, and will call for them to the very end of man's existence upon earth."

I do not quote this because I wish to endorse its every word; for instance, I fail to see that the moral relation of man to the Deity is at all sufficiently accounted for. Nor do I see that the *Beyond* was altogether so "inexpressible" as Max Müller would seem to imply; for, as we shall see, the Vedic poets did express its character in very marked terms. But I quote it, because I believe it most graphically describes the fact, that the early names of so-called Hindu polytheism were originally such attempts to describe the Deity in human speech as we use to this day. And how could they describe the Deity without previous knowledge of his character? Mere intuitions, or suspicions, from what they saw and experienced in nature are not sufficient explanations. What we notice is that the "Divine, omnipresent, omnipotent *Beyond*," whether realised as Aditi, Dyaus, Varuna, or Indra, has all the attributes belonging to the highest conception of the Deity.

One very old name for Deity is Aditi, the Infinite. On this name Max Müller has the following note*: "Aditi, an ancient god or goddess, is in reality the earliest name invented to express the Infinite; not the Infinite as the result of a long process of abstract reasoning, but the visible Infinite, visible by the naked eye, the endless expanse beyond the earth, beyond the clouds, beyond the sky. This was called A-diti, the un-bound, the un-bounded; one might almost say, but for fear of misunderstandings, the Absolute, for it is derived from *diti*, bond, and the negative particle, and meant, therefore, originally what is free from bonds of any kind, whether of space or time, free from physical weakness, free from moral guilt. Such a conception became of necessity [why necessity?] a being, a person, a god. To us such a name and such a conception seems decidedly modern, and to find in the Veda Aditi, the Infinite, as the mother of the principal gods, is certainly, at first sight, startling." To revert to the doctrine of Mr. Herbert Spencer; of course, a man whose intelligence could speculate about dream-ghosts, could speculate about space and dimensions; yet, at that supposed stage of development at which he could only reach the supernatural by attributing existence to the ghosts of

* *Rig-Veda-Sanhita*, vol. i. p. 230.

heroes, he could hardly argue up to the idea of the Infinite, much less make that idea a god. Indeed, even to take Max Müller's standpoint, the "visible" could hardly suggest to untutored man the Infinite; the "endless expanse" beyond the sky is not visibly so, but only reasonably so; to "vision" the sky does not suggest boundlessness, but only a dome of comparatively small dimensions. And yet the oldest known name for Deity is "The Infinite." This may be a "startling" discovery; but, however the idea arose, the striking fact is that in that aspect of Deity the early men of North India, or Central Asia, had as exalted a notion of the Deity as we have, and perhaps can have, ourselves.

It would be impossible to follow at length the history of Aditi in this paper, and it must suffice here to add that:— (1) Worship is offered to Aditi, the Infinite: "I invoke the divine Aditi early in the morning, at noon, and at the setting of the sun" (*Rig-Veda*, v. 69, 3). (2) Aditi is named as the source and end of being: "Who will give us back to the great Aditi, that I may see father and mother." (3) Aditi is invoked as supreme in the moral world: "May Aditi protect us from all sin" (*Rig-Veda*, x. 36, 3); "May Aditi give us sinlessness" (*Rig-Veda*, i. 162, 22); "May we, guiltless before Aditi, and in the keeping of the god Savitar, obtain all goods" (*Rig-Veda*, v. 82, 6). Under this aspect Aditi becomes the base of what Professor Max Müller translates by Aditi-hood: "May we obtain the new favour of the Ādityas (gods who are said to be the offspring of Aditi), their best protection; may the quick Maruts (the storm gods) listen and place this sacrifice in guiltlessness and Aditi-hood" (*Rig-Veda*, v. 51, 1). On this passage Max Müller says:—"I have translated the last words literally, in order to make their meaning quite clear. Āgas has the same meaning as the Greek *ἄγος*, guilt, abomination; an-āgās-tvá, therefore, as applied to a sacrifice or to a man who makes it, means guiltlessness, purity. Aditi - tvá, Aditi - hood, has a similar meaning; it means freedom from bonds, from anything that hinders the proper performance of a religious act; it may come to mean perfection or holiness."*

Professor Max Müller appears to think that the *moral* character of Aditi is a subsequent development of the primary abstract idea of the Infinite; but how would he account for the idea of sin, as something against the Deity, arising so early in connexion with thoughts of the Infinite, even though that

* *Rig-Veda-Sanhita*, vol. i. p. 245.

Infinite be personified? Is it not equally possible, and much more probable, that the moral aspect of Aditi is the original one? that still in the Rig-Veda epoch there remain echoes of a primary doctrine of the Deity, under the name of the Infinite, as the Creator, Sovereign, and Judge of all men; the Aditi-hood (Aditi-tvá) being synonymous with our "godliness"? Else it is difficult to see how moral guilt could be confessed to Aditi. For how should the idea of moral guilt have arisen? It is impossible that it could have been developed from the mere consciousness of the mysterious in nature. A consciousness of moral guilt, as a matter between man and the Deity can only arise, surely, from a knowledge of the holiness of the Deity, a knowledge that could not grow from the mere contemplation of the mysterious Infinite.

Besides Aditi, who is sometimes, as we have seen, invoked in the Veda,—as what Professor Max Müller calls "the Beyond, as what is beyond the earth and the sky, and the sun and the dawn," and to which he adds, that it is "a most surprising conception in that early period of religious thought,"—we meet with, and that more frequently, "the Âdityas, literally the sons of Aditi, or gods beyond the visible sky,—in one sense the infinite gods. One of them is Varuna, others Mitra and Aryaman (Bhaga, Daksha, Amsa), most of them abstract names, though pointing to heaven and the solar light of heaven as their first, though almost forgotten, source"* (i.e. almost forgotten at the time the Vedic hymns were written). Hence, under another aspect, the Deity is regarded as Varuna, the sky or heaven† (a name perpetuated in the Greek *Ouranos*). Varuna is evidently, in origin, only another picture of, and so only another name for, that which is also called Aditi. The same characters are ascribed to both; both are addressed in language belonging only to the supreme Deity. Thus, in a hymn,‡ of which I read Max Müller's translation, Varuna is addressed as absolute God:—

"Take from me my sin, like a fetter, and we shall increase, O Varuna, the spring of thy law. Let not the thread be cut while I weave my song! Let not the form of the workman break before the time!

"Take far away from me this terror, O Varuna! Thou, O righteous King, have mercy on me! Like as a rope from a calf, remove from me my sin; for away from thee I am not master even of the twinkling of an eye.

"Do not strike us, Varuna, with weapons which at thy will hurt the evil-doer. Let us not go when the light has vanished! Scatter our enemies, that we may live.

* *India*, p. 196.

† Cf. Luke xv. 21.

‡ *Rig-Veda*, ii. 28.

"We did formerly, O Varuna, and do now, and shall in future also, sing praises to thee, O Mighty One ! For on thee, unconquerable hero, rest all statutes, immovable, as if established on a rock.

"Move far away from me all self-committed guilt, and may I not, O King, suffer for what others have committed ! Many dawns have not yet dawned ! grant us to live in them, O Varuna !"

The theology of this is very wonderful ; if it were only generated by the conception by primitive man of the fact of infinity (I say "fact," because even to us infinity is but a negative term), by thoughts engendered by the contemplation of the sky and the light, and, we should not forget, aided by "dreams of ghosts."

Another passage relating to Varuna, of which Professor Max Müller says, "it is as beautiful, and in some respects as true as anything in the Psalms," is as follows :—"Varuna, the great lord of these worlds, sees as if he were near. If a man stands or walks or hides, if he goes to lie down or to get up, what two people sitting together whisper to each other, King Varuna knows it, he is there as the third. This earth, too, belongs to Varuna, the king, and this wide sky with its ends far apart. The two seas (the sky and the ocean) are Varuna's loins ; he is also contained in this small drop of water. He who should flee far beyond the sky, even he would not be rid of Varuna, the king. His spies proceed from heaven towards this world ; with thousand eyes they overlook this earth. King Varuna sees all this, what is between heaven and earth, and what is beyond. He has counted the twinklings of the eyes of men. As a player throws down the dice, he settles all things (irrevocably). May all thy fatal snares which stand spread out seven by seven and threefold catch the man who tells a lie ; may they pass by him who speaks the truth." *

Varuna, then, is the supreme, omniscient, sovereign ; the source of law ; the king of righteousness ; the dispenser of human life ; the forgiver as well as the punisher of sin. He has, in short, the characters that the Christian Church attributes to Jehovah.

Under another aspect the Deity is Agni, fire—with special reference, I believe, to the sacrificial fire. He is the supreme god, the "progenitor and father of heaven and earth, and the maker of all that flies, or walks, or stands, or moves on earth." One of the Vedic poets says, "I place Agni, the source of all beings, the father of strength." † He is also the forgiver of

* *Atharva-Veda*, iv. 16, quoted by Max Müller, *India*, p. 199.

† *Rig-Veda*, iii. 27, 9.

sin: "O Agni, thou who hast been kindled with this adoration, greet Mitra, Varuna, and Indra. Whatever sin we have committed, do thou pardon it!" * The forgiveness of sin is not a prominent doctrine of later Hinduism; and its existing in the early hymns of the *Rig-Veda* must point to an exalted conception of the moral character of the Deity amongst the forefathers of the Vedic poets.

Under still another aspect the Deity is Indra, the rain-giver. He has become the chief god of the Vedic period; an illustration, perhaps, of how the more material and immediate has always had a tendency to override the more spiritual and profound in religion. He has still, however, all the attributes of the supreme god; he is the creator, preserver, and upholder of all things.

Now, what especially strikes us is that the same attributes of Deity are ascribed to all these gods, whether Aditi, Varuna, Agni, or Indra, as also to others not here mentioned. Why this unity, or identity, of character? Had these gods been originally separate creations of the human mind, would they not have differed more in character as well as name? There is an immense difference between these ancient gods and the later Krishna, Rama, Ganapathi, &c., who were deified men, and had their separate and distinct characters. We can only account for the unity of character in these Vedic gods by looking upon them as originally the same Deity under different names. This, moreover, is the view of some, at least, of the Rishis of the Vedic hymns themselves. One says, "That which is *one*, sages name it in various ways. They call it Agni, Yama, Matarisvan." † Another says, "The wise poets represent by their words Him who is *one* with beautiful wings, in many ways." ‡

There is still another term, under which the idea of Deity is expressed: it is *Âtman*. *Âtman* was never the name of a god, but is the Self of both God and man, and is used to describe the Deity. Thus, in *Rig-Veda*, i. 164, 4:—"Who saw him when he was first born, when he who has no bones bore him who has bones? Where was the breath, the blood, the *Self* of the world? Who went to ask this from any that knew it?" Professor Max Müller quotes an early authority, of not later, he believes, than the fifth century B.C., who says, "That there is, in reality, but one God, but he does not call him the Lord, or the Highest God, the Creator, Ruler,

* *Rig-Veda*, vii. 93, 7.

† *Ibid.*, i. 164, 46.

‡ *Ibid.*, x. 114, 5, quoted by Max Müller, *India*, p. 144.

and Preserver of all things, but he calls him *Ātman*, THE SELF. The one *Ātman* or Self, he says, is praised in many ways owing to the greatness of the godhead. And he then goes on to say:—"The other gods are but so many members of the one *Ātman*, Self, and thus it has been said that the poets compose their praises according to the multiplicity of the natures of the beings whom they praise." Professor Max Müller appears always to translate *Ātman* by "Self," and his scholarship I am quite ready to bow before as one of the proudest monuments of this nineteenth century. But I cannot divest myself of the conviction, first conceived in India, that the earliest meaning of *Ātman* was *spirit* (does not the word still remain in the Greek *atmos*, *atme*?). It is the word that the pundits have, I believe, uniformly suggested for the translation of the Scripture "Spirit." If this be the original meaning of *Ātman*, what a remarkable parallel we have to "God is a Spirit," "The Spirit of God moved upon the face of the waters." *Ātman* is, of course, the Self; but the word signifying spirit may well always have been used to express the real Ego. At all events, the conception of the Great Self, whether originally conceived as spirit or not, is a very exalted one, and can be traced back to the Vedas at least, furnishing a presumption that the word and idea existed long before.

This is the one particular word which survived, to a pre-eminent degree, in the later philosophical period of Hindu religion. Professor Max Müller regards the idea of the *Ātman* as the fruit of a development of thought, "advancing to perfect clearness and definition." He says:—"Here the development of religious thought, which took its beginning in the hymns, attains to its fulfilment; the circle becomes complete. Instead of comprehending the One by many names, the many names are now comprehended" (i.e., in the period of the Vedānta philosophy) "to be The One. The old names are openly discarded; even such titles as *Pragāpati*, lord of creatures; *Visvakarman*, maker of all things; *Dhātṛi*, creator, are put aside as inadequate. The name now used is an expression of nothing but the purest and highest subjectiveness,—it is *Ātman*, The Self, far more abstract than our Ego,—the Self of all things, the Self of all the old mythological gods,—for they were not *mere* names, but names intended for something; lastly, the Self in which each individual Self must find rest, must come to himself, must find his own true Self." But I think the true idea of the *Ātman* existed long before, as indeed we have evidence from the *Veda*; and I think the development of the Vedānta was a develop-

ment, upon this primitive idea, of a humanised, philosophical, metaphysical religion (quite in accordance with what we know of human nature elsewhere), overpowering the earlier and truer religion of worship. The *names* of more ancient custom were dropped, because they were of no more use for philosophical speculation; they had been the offspring and aid of devotion, and when the spirit of devotion died, and so-called philosophy took its place, they died also.

There is no development in Hinduism, such as would be expected on Mr. Herbert Spencer's theory. There is, on the contrary, the degradation of religious ideas by a growing exclusiveness of attention to that which was once but the picture of the Deity; by mistaking the symbol for the thing symbolised; by human philosophy; and by the introduction, as the ages rolled on, of the deified hero and the fetich. This is human nature. Exact parallels to all these downward steps can be traced in the modern history of the Christian Church. But bright in the earliest days of the religion of the Hindus are the eternity, the infinity, the omnipresence, the omnipotence, the holiness of God, who is One. Primitive man, then, so far as illustrated by the Hindu, seems to have started his religion with as high a conception of the Deity as that which marks the present thought of Christendom; the traditions of which still remain in the *Rig-Veda*, though already shrouded by human inventions.

Nor is this only true of the Hindus. There are indications, more or less evident, in the histories of other religions to the same fact. Thus, for instance, to go to the religion of the Egyptians, who are well known to have made almost every living thing an object of worship, and thus might be taken at first sight as contributing evidence to Mr. Spencer's side of the question, we find that there are distinct traces of a fundamental belief, clearer the further we go back, and therefore we may conclude their earliest belief, in the unity of the Godhead. Thus in the hymn to Amen-Ra, which is supposed on good evidence to have been written in about the fourteenth century B.C. he is addressed as,—

"The good God beloved,
Giving life to all animated beings :

* * *

The Ancient of heaven : the Oldest of the earth :
Lord of all existences :

* * *

The *ONE* in his works, *single* among the gods :

* * *

Lord of truth, Father of the gods :
 Maker of men, Creator of beasts,

* * *

In whose goodness the gods rejoice,
 To whom adoration is paid in the great house.

* * *

Lord of Eternity, Maker everlasting :

* * *

Judging the poor, the poor and the oppressed :
 Lord of wisdom, whose precepts are wise."*

Though already there are *gods*, yet here remains the tradition of ONE; and that ONE, the Creator, true, eternal, merciful, and wise; the giver, too, of PRECEPTS. How should this last idea have arisen, except on a tradition of revelation? We hardly come, as Mr. Spencer says, "finally to God"; but we start from a God.

In a still more ancient fragment of an Accadian liturgy, translated by Mr. Sayce, and inserted in vol. ii. of *Records of the Past*, the antiquity of which is believed to "go back beyond the second millennium B.C.," we find the distinct tradition of one Supreme God. This liturgy appears to be a war-song, or song of triumph, and no doubt marks an age, and a race, of fierce conflicts; and to a certain extent it supports Mr. Spencer's observation that, during the militant phase of activity, the chief god is conceived as holding insubordination the greatest crime, as implacable in anger, as merciless in punishment." But this god, who speaks in the old Accadian liturgy, is not only a great and terrible god, his particular attributes, so far as they are described, are those which accord with an exalted conception of the Deity; he speaks as one supreme; and apostrophising the lightning, not merely as lightning, but as the symbol of his power, he claims for that power not only conquest, but the establishment of heaven and earth.

"I am Lord. The beetling mountains of the earth shake their head to the foundation.

* * *

"The sun of fifty faces, the lofty weapon of my divinity, I bear.

* * *

"The defender of conquests, the great sword, the falchion of my divinity, I bear.

* * *

"The lightning of battle, my weapon of fifty heads (I bear).

* * *

* *Records of the Past*, vol. ii. p. 129.

"That which maketh the light come forth like day, the god of the East, my burning power (I bear).

* * * *

"The creator (or, establisher) of heaven and earth, the fire-god, who has not his rival (I bear)."

The analogy between the fire-disk with fifty faces and the flaming sword, that turned every way to guard the entrance to Paradise, has been suggested; but whether that tradition really exists here it would be difficult to say. It is, however, perhaps worthy of note that the very fact of these words being put into the mouth of the great god himself may be an indication of the tradition, or knowledge, that God had spoken. Nay, some of the words may be an actual transcript of words divine. "I am Lord." What could be more sublime? We inevitably think of what we believe to be the certain words of God, "I am the Lord thy God"; and of David's hymn of war-triumph, "Blessed be the Lord my strength, which teacheth my hands to war, and my fingers to fight. Bow thy heavens, O Lord, and come down; touch the mountains, and they shall smoke; cast forth thy lightnings, and scatter them; shoot out thine arrows, and destroy them."

In Assyrian hymns, too, though there are already gods many and lords many, there is still the echo of the fundamental thought of the supremacy of one; of that one in a moral aspect; and of creation. Thus:—

"O my Lord! my sins are many, my trespasses are great;
And the wrath of the gods has plagued me with disease;
And with sickness and sorrow.
I fainted; but no one stretched forth his hand!
I groaned, but no one drew nigh!
I cried aloud; but no one heard!
O Lord! do not abandon Thy servant!
In the waters of the great storm, seize his hand!
The sins which he has committed, turn Thou to righteousness!" *

With the exception of one word, which, after all, requires, perhaps, rather explanation than change, this prayer might have been offered up yesterday by some saint of God in the Christian Church.

This God is also the Creator:—

"The God my Creator, may he stand by my side!
Keep Thou the door of my lips! Guard thou my hands, O Lord of light!

* *Transactions Soc. Bib. Arch.*, vol. ii. p. 60.

In heaven who is great ? Thou alone are great !
 On earth who is great ? Thou alone are great !
 When thy voice resounds in heaven, the gods fall prostrate !
 When thy voice resounds on earth, the genii kiss the dust ! " *

It should not escape observation, how few are the remains we have of Assyrian, Babylonian, and Egyptian thought in remote times, compared with the literature of ancient India ; and how remarkable it is that, even from those fragments, we should have the evidence we have on these points.

Lastly, even amongst untutored, so-called savages, whose fetich-worship is supposed to point to the germs of primitive religion, there are existing traces of an original belief in one Supreme God ; a belief that we have no evidence whatever for attributing to the influence of the modern thought of more civilised nations. I have only space to quote a single example. The Yoruba tribe of West Africa, notwithstanding their fetich-worship, own a supreme god, whom they name Olorun, as to whom, for instance, they have a proverb, as ancient, no doubt, to them as their hills : " Leave the battle to God (Olorun), and rest your head upon your hand." †

On another subject, on which very much has been written, it seems necessary to add a word here, though anything like a full discussion would be impossible. I mean the ancestral worship which prevails, and has prevailed, so widely. It is popularly regarded as one of the steps in the evolution of religion, an advancing phase, in short, of ghost-worship. I regard it as one of the steps which mark its degradation. These, briefly, are my reasons. In almost every instance, if, indeed, there be an exception, in which we find ancestral worship, we can look back and discern a primitive belief in the immortality of the soul. It is so with the Hindus. We cannot go further back in documentary evidence than the *Vedas*, and there we find such passages as this, quoted by Max Müller :—" We drank Soma, we became immortal, we went to the light, we found the gods." ‡ It is the same with the Assyrians ; as, for instance, in a prayer for the king :—

" After the life of these days,
 In the feasts of the silver mountain, the heavenly courts,
 The abode of blessedness :
 And in the light
 Of the happy fields

* *Records of the Past*, vol. iii. pp. 136, 137.

† Bishop Crowther's *Yoruba Vocab.*, *Introd.*, p. 36.

‡ *Rig-Veda*, viii. 48, 12.

May he dwell a life
Eternal, holy,
In the presence
Of the gods," &c.*

On this subject of ancestral worship in India, Professor Max Müller has written at length and with great care and learning; but it is remarkable that he says, after all, "When we ask the simple question, What was the thought from whence all this outward ceremonial (*i.e.*, the performance of endless rites; all intended to honour the departed) sprang, and what was the natural craving of the human heart which it seemed to satisfy? we hardly get an intelligible answer anywhere."† He speaks, indeed, of the "human impulse" to the daily ancestral sacrifice as being "clear enough," since it was "connected with the daily meal;"‡ but why should the daily meal naturally suggest sacrifices to the Pitris or ancestors? It is difficult to find the impulse in anything human, and thought seems to reduce the "clearness" to opacity. On sacrifices, as connected with the daily meal, I shall have a word to say afterwards. Max Müller also says, with regard to the monthly ancestral sacrifice, that "it was at such moments as the waning of the moon that his thoughts would most naturally turn to those whose life had waned, whose bright faces were no longer visible on earth, his fathers or ancestors."§ But are we really "naturally" reminded of our ancestors by the waning, or reappearing, moon, any more than by a thousand other things that happen? Are not people "naturally" prone to bury their ancestors out of sight and out of mind? Is not the real explanation of these ancestral sacrifices very different, and, in fact, the very converse of that so industriously, and often eloquently, urged upon us? Is it not that the primitive men *began* their religion with the full doctrine of the immortality of the soul? and that the departed "went to the light" and presence of the Eternal? that, in short, they began their religion in the full blaze of what is now the brightest hope of the Christian, the "inheritance incorruptible, and undefiled, and that fadeth not away?" The declension from the use of sacrifice, as a worship originally before the Deity alone, to a worship of ancestors, until in some cases the ancestral worship alone remained, is so much in accordance with what we know of human nature, that we have the exact parallel in the history of Christianity itself within absolutely historic observable periods.

* *Records of the Past*, vol. iii. p. 131, &c.

† *India*, p. 228.

‡ *Ibid.*, p. 230.

§ *Ibid.*, p. 231.

In nations retaining no original religious documents, it is no wonder that ancestral worship alone remains. These matters, to be properly understood, need to be brought still more fully into the light of actual history, and cannot be solved by speculations. History will reverse the conclusion to which Professor Max Müller and many others have come; as, for instance, that "a thoughtful look on nature led to the first perception of bright gods, and in the end of a god of light, as love of our parents was transfigured into piety and a belief in Immortality," &c.* History will be seen to teach that God's first name was light, but that He was forgotten in the symbol; and that man's first belief, as to himself, was in Immortality, but was degraded into ancestral and saint worship.

Another most interesting and suggestive study is that of the monuments and characteristic observances of religions, most, if not all, of which can be traced back to a unity in the far past, which must speak of a common purpose in their origin. We take, for instance, the sacrificial aspect of all ancient religions. It is the fashion to regard the sacrificial system as a mark of religious evolution from the first germ of ghost-worship that we have heard so much about; fear of the Deity, which had at last grown out of this ghost, led men naturally to think of appeasing a god by offering him "the best" a man possessed—hence the first step is sacrifice of the first-born, as the best a man has to give, supposed to be illustrated in the offering of Isaac by Abraham; the next is a "commutation" by animal sacrifices; the next a supplanting of blood sacrifices altogether, and any idea of substitution, by self-sacrifice in almsgiving and moral obedience, as in the case of the Buddhists. This is the view taken by, amongst others, Mr. Moncure Conway, as in an article in the May number of the *Nineteenth Century* for 1880, on Shylock's bond, the "Pound of Flesh." He attributes the idea of sacrifice, and its whole history, to the struggle in all ages and races between "the principle of retaliation and that of forgiveness," on purely human grounds. But, to say nothing of the difficulty of satisfactorily tracing through history the working of such principles, look at a question more immediately prominent on the face of sacrifice, the method of propitiation. What is there in human nature to suggest to man the idea of propitiating an angry, or mysterious, god by an offering in blood? Men do not so propitiate each other;

* Max Müller, *India*, p. 243.

there is nothing in human nature, surely, to suggest to a man to go into the presence of an earthly prince, when he would ask a favour, or avert disaster, whether that prince be dreaded or loved, with the bleeding corpse of his first-born; or even with the corpse of an animal, unless, indeed, the animal were intended as a present useful to the prince; and, then, why the offering of blood? Of course, it may be said that by death only could the offering be supposed to reach, and therefore benefit, and so bribe, the god. But is this the primary idea of sacrifice? It is to be remembered that the animal is supposed, on the theory of Mr. Conway, at least, to be only a substitute for the first-born—not to feed the god, though even that idea belongs to a later superstition—and the first-born but a substitute for the man himself. Thus Mr. Conway says, "Since finite man is naturally assumed to be incapable of directly satisfying an infinite law"—whence the idea to a primitive man of infinite law?—"all religions, based on the idea of a Divine Lawgiver"—whence, also, this idea of a "Divine Lawgiver?"—"are employed in devising schemes by which commutations may be secured and vicarious satisfactions of Divine law obtained. No Deity inferred from the always relentless forces of nature has ever been supposed able to forgive the smallest sin until it was exactly atoned for. For this reason, the Divine mercifulness has generally become a separate personification. The story of the "pound of flesh" is one of the earliest fables concerning these conflicting principles (*i.e.* retaliation and forgiveness).

We must search for another origin for this most remarkable, and, we need not hesitate to say, mysterious, observance of sacrifice found everywhere in the ancient nations of the world, and existing in nearly all unchristianised nations still, mysterious enough to cause Max Müller to write with regard to sacrifices offered to the Manes, "What was the thought from whence all this outward ceremonial sprang? and what was the natural craving of the human heart which it seemed to satisfy? We hardly get an intelligible answer anywhere."

The historical authority of the Bible is equal at least to that of any other historical record whatever. It is there that we have a full explanation of the meaning of the sacrifices, which were, according to that Book, appointed to be offered by the Israelites. The New Testament tells us they were a figure, for the time then being, of Christ. We can understand it. A great event was to take place in the history of the world of man—the Christian believes the greatest of great events—and the world must be educated for it from the earliest days of the human family. That education was based

on the meal, which must every day be taken. The meal was to be every day the lesson of God, the life of the world, both in a physical and spiritual sense. The shedding of the blood of the food-animal was to be a picture, through special religious rites, of the centre of all religion—the death of Jesus Christ, the Life of the world. These points could be greatly enlarged upon, were it possible in this paper; but we can only at once assume our own standpoint, that we have no clue whatever to the sacrificial system, or even the idea of sacrifice, except upon this statement—a statement which is a claim of history; a statement of that the nature of which we cannot argue up to from *à priori* principles, or hypotheses; but which we can test by the facts of history.

Accordingly, we find that such a pictorial system was preserved by all nations long after they had left their original home in Central Asia; as systems, and acts, and monuments always will survive, even though the origin and true meaning may have been long forgotten. It was, no doubt, because men forgot the original lesson of sacrifice, and Him who had appointed it, that the Mosaic Dispensation was a re-appointment of that system. The ancient features of such a system still live in India, and were there in the Vedic era; can be traced through the history of the human race; and are exactly what we should expect in such remains. It is not my office here to maintain the doctrine of a vicarious offering for the sins of the whole world. I have only to look now at certain historical facts; and the position I take is, that if an original revelation as to sacrifice, &c., were given similar in character and intention to that which we read in the Mosaic Dispensation, the remains of the sacrificial system, and other religious monuments and observances, are in exact accordance with it.

To take, first, the Scripture account of sacrifice as existing before the time of Moses. According to that account, sacrifices were not originated under the Mosaic Dispensation. Jethro, before the institutions of Mount Sinai, “took a burnt offering (*olah*) and sacrifices (*zebachim*) for God; and Aaron came, and all the elders of Israel, to eat bread with Moses’ father-in-law before God.”* These are the same words that are afterwards used for “offerings” and “sacrifices” of the Mosaic Dispensation; and here is, not an ordinary, but no doubt a sacrificial feast, the old-world sacrament, “before God.” Again, Jacob, on the eve of his memorable parting with Laban, “offered sacrifice upon the mount, and called his

* Ex. xviii. 12.

brethren to eat bread." Was not the "eating bread" also the same sacrificial feast? Noah, also, on coming out of the ark, "builded an altar," and took of every clean beast, and of every clean fowl (*i.e.*, such as were eaten), and offered burnt offerings (the same word as above, *oloth*) on the altar." Melchizedek, also, perhaps one of the old Hittite race, was both priest (*i.e.*, sacrificer) and king. The offering itself of tithes was a part of the old sacrificial system—preserved both in India and among both Greeks and Romans; and the bringing forth of bread and wine may have had a sacramental aspect, though I would not insist upon it. Lastly, the history of Abel takes the custom of sacrifice into the first home, as we believe it to be, of the human family.

The history of the Hindu sacrificial system is a long subject; but it may be sufficient here to point out, that it preserves, from times no doubt antecedent to Moses, many of the salient features of such a system as that of the Hebrews. The sacred sacrificial fire is one of the most prominent marks of early Hinduism. The sacrifices were offered at marked seasons, some daily and in connexion with meals morning and evening; sacrificial observances were, and are, customary, even at the daily meal at home as well as in the temples; others are offered at full moon and new moon; others at times of harvest. A portion of the offering in the temples is placed on the altar-fire, the rest eaten, as in the case of the Hebrews. The idea of sacrifice is propitiation, and the forgiveness of sin in connexion with it still lingers, though the petitions are commonly for temporal, earthly blessings. The hymns of the *Rig-Veda* were composed for use at the sacrificial rites. The offering is, indeed, usually of the fruits of the ground, such as the *Minchah* offerings of Moses; but bloody sacrifices are not unknown, and those that still exist are of food-animals, though the ancient sacrifice of the horse, common to the Hindu and the European branch of the Aryan family, may be taken as an exception. The Soma libation, though long more or less of a mystery, is especially prominent, and seems analogous to the libations of wine appointed by Moses; the absence of wine from the Hindu sacrificial rites, as well as the predominance of the *Minchah* offerings, are, perhaps, to be explained from natural causes, India never having been, in any prominent sense, a grape-growing country, and the fruits of the earth most probably abounding greatly beyond the flocks and the herds; a fact that will, no doubt, account for the high value set upon the cow and her milk in early times, as well as for the vegetarian diet of the people of that country which still obtains.

Among the ancient Greeks and Romans, again, the sacrificial system was in equal force, and of similar character in its details to that of the Hebrews and the Hindus. The principal sacrifices were of food-animals. In the time of Homer it was the custom to burn only the legs, enclosed in fat, and certain parts of the intestines, while the remaining parts of the victim were consumed by men at a festival meal (cf. Lev. iii., &c.). Wine and incense were thrown upon the burning victim, and prayers were offered. The offering of fruit and cakes also was prominent, and they were often offered as tithes of the harvest, and as a token of gratitude to the god supposed to be propitiated. But further particulars need not be enlarged upon, which are known full well to every classical scholar.

Among the Phœnicians and Assyrians also there were most elaborate sacrificial rituals. Some most striking parallels between those systems and the Hebrew sacrifices are noted by Mr. Sayce in *Fresh Light from the Ancient Monuments*, the offerings being called among the Assyrians "peace-offerings," and "heave-offerings," and "sacrifices for sin"; the Phœnician ritual also speaking of "full-offerings," "prayer-offerings," "thank-offerings," and the sacrifices being those of bullocks, sheep, goats, lambs, kids, and birds, as well as meal-offerings and oil.*

Without quoting any further examples, we have sufficient evidence that all the sacrificial systems of the nations point to one type in the far past. The further we go back the more perfect, as it appears to me, is the resemblance of the system to that which we believe to have been of Divine appointment. The primitive man must have had a most elaborate sacrificial worship to enable his descendants in so many scattered families to preserve such relics as we find of the same character. For it is preposterous to suppose that each separate nation has worked out its own sacrificial system so as to hit the same identical customs as to libations, kinds of sacrifice, and endless minutiae, which are common to many, if not all, of these systems. And if primitive men worked out this system to the perfection indicated, while still existing as only one family in Central Asia, and gave it to the different members of their race before their migration to other lands, then we are entirely in the dark, with regard to natural causes, as to the processes by which it was arrived at; and the fragments of the system scattered over the earth, and now existing in India and else-

* *Fresh Light from the Ancient Monuments*, pp. 77 et seq.

where, cannot be clues to us in any degree as to the method of its initiation. The only rational explanation of this sacrificial system is that it was originally appointed by God himself, in the same manner and for the same purpose for which the Hebrew system was appointed.

I know that it may be said that the evolutionists claim the details of the Mosaic Dispensation as being only corroborations of their theory. But against this I may place the fact, that that Dispensation, in its later exponents at least, claims to have been a lesson to the old world of the coming sacrifice of Christ; and, if that sacrifice be not historical, we may as well shut up history altogether. Nay, the very sacrifice of Christ, or the belief in it, is also claimed by the evolutionists as the last illustration of their doctrine. On that aspect of the subject, however, we should join issue with them on altogether different grounds, and such as cannot be touched in the present paper.

Other monuments and observances of religion can also be traced back to a very great antiquity, thus confirming what has been said. The tracing back of the Sabbath to the times of the Accadians, a subject well understood in this room, and evidences, apparently unquestionable, of its observance in China in extremely remote times,* connected with its name as the "Day of the Sun," which comes to us from an antiquity we cannot at present fathom (except, indeed, by the word of Scripture), are a further indication of a unity in primitive religious teaching, and a beginning from the very principles to which some affirm we have been only gradually approaching by the light of nature.

The same may be said of the character of another class of monuments, the temples built for the worship of Deity and for the due performance of various religious rites. Were a person of perfectly unbiassed mind to be asked why a building existing, probably, at least 2000 B.C., another known to have been constructed 1400 B.C., another known to have been built 1000 B.C., and others of unknown date, all of peculiar character, and known to be for the same purpose, namely, the worship of the Deity, happen to be of precisely similar construction, he would, no doubt, unhesitatingly say that they must all have been constructed upon some model which existed in the extreme past, at least as old as, and probably older than, the earliest known building of the kind, and that, therefore, the presumption is that they are, practi-

* See *The Primitive Sabbath*, by the Rev. James Johnston.

cally, to be traced back to some one architect who planned the original one. How is it, then, that the Temple of Sepharvaim, discovered by Mr. Rassam, the Tabernacle in the Wilderness, Solomon's Temple, the Hindu temples, the old Greek temples, are all constructed on one particular plan? Here, again, we are taken back to a single ideal in the remote past in connexion with the externals of religion. And the inference is, at the least, that religion began in times as remote as we can possibly at present reach, with as perfect a ritual as any we can find in existing documents. And if we believe that one of those temples was constructed on plans laid down by Jehovah Himself for His own worship, with a ritual of His own appointing, we can scarcely hesitate to believe that the first one of all was from the same hand.

Other illustrations of a similar kind are possible ; but these are, perhaps, sufficient to support my thesis.

We do not, then, seem to find the "primitive human mind"—if by that we mean the mind of the pre-historic man—altogether "without religious ideas or religious sentiments," though we can see him pretty clearly as he existed as a religious man at least 4,000 years ago. Nor do we find that, "in the course of social evolution and the evolution of intelligence accompanying it, there are generated both the ideas and sentiments which we distinguish as religious." On the contrary, we find that the man of 4,000 years ago had received from his ancestors conceptions of the Deity equal to those which we now possess. What we really do see, in tracing "the course of social evolution" (if I may still use the word, though with a slightly different meaning) "and the evolution of intelligence accompanying it," is that human nature has had a constant tendency to, and has constantly fallen in the direction of, what we may best term as materialism. Instead of, as Professor Max Müller says, discerning a "gradual advance from the material to the spiritual, from the sensuous to the super-sensuous, from the human to the super-human and the divine,"* we discern, as I firmly hold, on a candid examination of history, a constant tendency to retreat from the spiritual to the material, from the super-sensuous to the sensuous, from the super-human and the divine to the human.

If it be retorted that 4,000 years is nothing in man's history, and that ages previous to that he was working his way in Mr. Spencer's style, and that he may have reached by

* *India*, p. 159.

natural processes in certain directions the same conclusions as to the Deity that we have reached ourselves, and that the short space of 4,000 years is but a crumb in the balance, well, then, I must leave it to others, within whose province of study it more properly falls, to say how long man has existed as man on the earth.

THE CHAIRMAN (Mr. D. HOWARD, F.I.C.).—We have to thank the author of the paper for the interesting protest he has offered against the very common, and, as I believe, the very mistaken, idea which is entertained with regard to the earliest history of mankind. It certainly does seem strange that, after all the centuries of accurate science of which we boast, it should still be necessary to reiterate and insist upon the necessity of understanding the very first principle of inductive science—that, before an induction can be made, there must be an accurate collection and verification of facts, those facts being chosen from variants as different as possible, in order to avoid the liability of special circumstances detracting from their value, and then put together so as to form a whole. The very fact that, as a rule, the theories of religious development are based on the assumed condition of the lowest tribe of savages, may at once be met by the question Mr. Collins asks, What right have we to suppose that the Zulu, the fetish-worshipper, or the Tasmanian savage, is the true representative of the earliest state of mankind? No doubt, if we wanted to study English history, and were to get hold of a west-country peasant or a Cumberland dalesman, we might thus obtain a valuable illustration and an interesting example of the Englishman of the past; but surely one would expect to learn very little of the bygone characteristics of the English race by choosing a London *gamin* as a specimen whereby to illustrate a theory. Thus, even the most enthusiastic evolutionist is obliged to bring in the idea of degeneracy to account for a good many things he perceives in Nature; and we constantly find that the upholders of the evolution theory are compelled to introduce this element in order to explain a great deal they meet with in civilisation. Is it not, according to their own theory, most probable that the dominant races are those who have best adhered to, and have worked up, the best points of their civilisation, while those constitute the lowest races who have left the best side of their nature uncultivated? Therefore, we have a right to contend that the lowest type of the human race cannot be a fair specimen of our ancestors, and that, if our Norse progenitors had been shown a Tasmanian savage as being a fair representative of what their ancestors were, they would not have felt at all gratified by the comparison, while, surely, we may suppose that those old Norsemen had quite as good an idea of what their predecessors were as the modern savant can form, and they certainly did not look back upon their ancestors as a degenerate race; on the contrary, they always spoke of them as heroes who had done mighty deeds, and not as a

type of being much lower in the scale of humanity than themselves. This being so, surely Mr. Collins's method is a sound one, namely, that we should look back to the earliest historic books and records, and see what testimony they are able to afford. For my part, I think that the more one looks at those old records the more profoundly is one struck by the degeneracy of modern heathenism. (Hear, hear.) When I use the word "modern," I mean modern in a comparative sense ; because, after all, modern heathenism began when Abraham uttered his protest against it ; and yet, even in Abraham's days, what, we may ask, was the state of Egypt ? Is there a single idolatrous image in the interior of the great Pyramid ? The best judges say "no." There is the winged circle, which is supposed to be the emblem of the Deity, and that, I think, is the only thing of the kind there to be found. If we may accept the ancient records contained in the Bible as history,—and the man must be a bold sceptic who would deny their historical value,—it is interesting to find how the patriarchs appealed to the knowledge of the one Divine Being with perfect confidence, and the appeal was not refused. The God of Abraham was recognised as the one God, and in a way that is surprising if we say that the worship of the Egyptians in those days was the worship of the Egyptians in a later and more debased state. I believe it will be found that this was universally the case, whether in Egypt, in Assyria, or among any of the Aryan tribes, or even those of the Vedas and the Zendavesta—wherever we look among the most ancient records we find there was but one conception of the one God—God the Infinite—evidenced in the beginning of the history of their religion. We owe a good deal to the Greeks ; but we must remember that their conception of heathendom was the most perfectly sensuous of all the forms that heathendom has assumed. We know that Greek heathendom was the finest type of that condition of belief—at once the most artistic and the most sensuous, but by no means the highest. They had fallen very far below the nobler worship of their ancestors ; they had fallen very far below the savage Goths, who, in the strength of their old faith, came down upon and harried the civilised world, whose religion had become a snare and not a source of strength to them. We hear a good deal about what is termed the mere fetish-worshipper, who has no conception of a God. But does such a creature exist ? Bishop Crowther does not know him ; none of the missionaries have met with him. No doubt, he exists in the minds of those who refer to him, because he is required ; but, at any rate, he is very difficult to find. But let us see what this fetish conception is. It is not an original nor a primary conception in the fetish-worshipper's mind. It is merely a vain attempt on the part of an utterly gross intellect to grasp a conception which it knows exists but which is quite beyond its reach. The fetish-worshipper no more believes that the fetish is an actual God than the Greek, who never got beyond the use of the abacus, conceived that the balls on the string by which he was counting were the actual sum he was working. It was simply, in the case of both, a material representation of a

thing difficult to grasp ; and the fact, that the fetish-worshipper can hardly rise beyond his fetish, is only the result of his degraded nature, and not of anything remarkable in his religion. The fetish God of the fetish-worshipper is just as much, and just as little, a representation of something beyond as the Greek statue of Jupiter was the representation of the Zeus, who, after all, was the Dyaus of the old Aryans, whose name, curiously enough, is still to be found in out-of-the-way country parts of England, where the people swear "by Jove," without any reference to classical knowledge, but simply as another word for the sky, the old word having survived without those who use it being able to grasp its real meaning. I think that the more we study this subject the more convinced shall we be that Mr. Collins is right and the modern theories wrong. I say boldly, let us appeal to facts. (Hear, hear.) In these days of inductive science it is hardly fair to have what is generally regarded as theoretical treated as actual proof, and to be told, "If the facts are against us, so much the worse for the facts." (Applause.)

Mr. G. WISE.—I wish to point out that on the third page of the paper Herbert Spencer is quoted as saying, "In the primitive human mind there exists neither religious idea nor religious sentiment ;" but it is somewhat remarkable that Professor Tyndall, in his *Belfast Address*, should have said :—

"There is also that deep-set feeling which since the earliest dawn of history, and probably for ages prior to all history, incorporated itself in the Religions of the world. . . the immovable basis of the sentiment in the the Nature of Man."—*Belfast Address*, p. 60.

A statement such as this from a man like Professor Tyndall, who, has been regarded as a Materialist, ought to carry some weight. Professor Tyndall also says, "Physical science cannot satisfy all the demands of man's nature ;" while Professor Max Müller says, "Wherever we find man we also find worship and religion ;" and in a very able book in the library of the Institute, written by a French anthropologist and entitled *The Human Species*, the author criticises very severely the conclusions of Sir John Lubbock concerning the non-universality of religion. The truth is, that in every part of the world, in some form or other, a knowledge of God is found, and I believe Mr. Collins's paper will be of great use to all the religious societies and lecturers who came in contact with those sceptics who were constantly endeavouring to influence the minds of young men by trying to prove that the religious sentiment is not universal, and that the grand propitiation of God was not the original conception of religion. I am pleased to see that a very able work has been written by Canon Rawlinson, entitled *The Religions of the Ancient World*, which in every way substantiates the concluding remarks of Mr. Collins's paper. It goes to show that the one great God was the conception of the early religions, just as the author of this paper has shown how marvellously the monotheistic idea has prevailed throughout the world, I think that with Mr. Collins's paper ought

to be classed one read before the Institute a long time ago by Bishop Titcomb, in reply to Sir John Lubbock's statement regarding monotheism. In that paper the author gave statement after statement, and proof after proof, that the original conception of God was the one great God of the Hebrew Scriptures.

Mr. W. P. JAMES, F.L.S.—I have had great pleasure in reading the paper in the absence of the author, whose general conclusions I sympathise with, especially with the statement that the farther back we go in the examination of primitive religions the nearer do we get to primeval revelation. But I rather differ from the popular view in reference to the theories of Professor Max Müller, who is the representative of a school which believes in a science called that of "Comparative Religion." Now, I am one of those who profoundly disbelieve in this new science. I regard it as one of the impostures of the day, and I unhesitatingly say there is no such science. It is only a pseudo-science. It is supposed to be derived from the comparison of all forms of religion, including the Jewish, of which Christianity is the complement. But a true comparative science can only be founded when the things compared are of the same kind. Now, the religions of the world are not of the same kind. They are not homogeneous. There is an impassable gulf between the Jewish religion and the others, and any comparison between them is simply like one between animals and crystals, between which there are no points in common. The Jewish religion stands in a unique and isolated position, from the fact that it is the only religion through which runs the golden thread of inspiration. It is the only religion in which there is any revealed truth at all, except when borrowed from foreign sources. All comparisons consequently made between it and others seem to be utterly futile; and this supposed science has no postulates to start with. Of the precarious character of some of its conclusions I may say this: For the last twenty years Professor Max Müller has been telling us that Zeus means the bright sky. Now, the new school of German philologists do not agree with this derivation, but say it is an old word signifying God. A great deal of the old comparative romancing was entirely founded on that supposed derivation. This simply shows on what a precarious foundation Professor Max Müller is building up his imaginary science. I think the author of this paper might have given us a fuller treatment of the ancient Persian religion. The old Hindoo religion is very much of the same kind as that of the Old Greeks,—that is to say, it is a system of nature-worship, and, like all systems of nature-worship, it ultimately falls away to gross impurity. My own acquaintance with it is very slight; but still I may say that I do know what the Greek polytheism was, and it is hardly possible to describe plainly the conclusions to which their system of nature-worship eventually led them. The Semitic nations, such as the Assyrians, were, apparently, at one time not so prone to nature-worship as the Aryans, and would appear to have had to some extent higher and purer ideas. All through the history of the past, man has often risen

above his creed—has shown himself better than his mythology. As Tertullian said long ago, "The soul of man is naturally Christian." I could point to many unconscious utterances of heathen writers as proofs that man has risen to a higher level than that of his popular theology, and has instinctively formed and expressed a belief in the unity of the Deity. The subject, however, is one that I am so little prepared to speak on, that it is with great diffidence I make these remarks, and I hope that some one will follow who will favour us with a more coherent speech. (Applause.)

The CHAIRMAN.—It is only those who have tried to read a difficult essay at short notice who can fully appreciate how much we owe Mr. James for reading this paper. I can say that it is by no means an easy thing to do, for I have tried it. It was very kind on his part not only to read the paper to us, but also to favour us with his remarks upon it. I wish the author had been here, because, had he been, I am inclined to think he would have gone a long way in the direction Mr. James has indicated with regard to our not trusting too implicitly to Professor Max Müller's theories. (Hear, hear.) To a certain extent we may accept his evidence of fact, but I, for one, am certainly not prepared to accept his theories exactly as he has put them forward. Mr. James has referred to the desirability of studying the Persian religion, and has thus raised one of the most interesting points we could consider in relation to this subject; but it is too late for me to attempt to go into it now, and, moreover, it is a matter which requires to be dealt with by a specialist.* But I may say that at a very early period, before the date of the Vedas, there was a protest against the degeneracy of the old Aryan religion so strong that the *dev* or *div*, who is mentioned here as the Aryan God, was taken by the Persians to express what we express, with the same root, in the term "devil," the word being supposed to have been derived from the Persian mythology. It is assumed that they took the gods of the rival tribes to express their devils by, and a very simple process of thought shows how intensely strong their feeling was with regard to the corruption of the old religion that had taken place in India. I think that that very corruption of the original religion is a testimony against the notion that man was a fetish-worshipper, to begin with (Hear, hear.)

The meeting was then adjourned.

* A paper on the "Religion of Zoroaster," by R. Brown, Esq., Jun., F.S.A., will be found in vol. xiii. p. 246.—ED.

REMARKS ON THE FOREGOING PAPER ;

By The Reverend Canon SAUMAREZ SMITH, D.D., Principal of St. Aidan's College, Birkenhead.

The Honorary Secretary has kindly given me an opportunity of making some comments upon Mr. Collins's paper, as I was unable to be present at its discussion.

The time at my disposal will prevent me from saying much, but I am glad to express my sense of the value of Mr. Collins's line of thought, and to make a few remarks upon one or two of the points suggested for reflective argument. I quite agree with the main contentions of the paper, which is an interesting, thoughtful, and useful one. Mr. Collins argues that religions are not, when historically viewed, a development from ignorance so much as a degradation from knowledge ; and this argument is equivalent to the statement, that an "original revelation" is a more probable theory and more correspondent to facts than the theory of mere "natural evolution." The spiritual concept of God was rather an original *datum* than a result of philosophising effort. The moral idea, *i.e.*, the consciousness of responsibility, is never absent from the earliest religious utterances : and the prevalence of sacrificial observances points to a common origin.

Let me begin by referring to the way in which "anthropomorphism" is often used *in malam partem*, as a term intended to condemn the views of those to whom it is applied. Mr. Collins has rightly reminded us that some "anthropomorphic" language about God is indispensable. The idea of God must be expressed in terms of human existence for human beings, however far the actuality of God's being may transcend the symbolic range of human language. And we can certainly use terms about God's eyes, hands, feet, &c., without being "anthropomorphites," who think of God as having the shape and form of a man. ("The heaven is my throne, and earth is my footstool," is an anthropomorphic expression, yet the idea is not degrading, but sublime.)

And it should be remembered that the most abstract idea of God is not the truest idea. The Duke of Argyll, in his important and very interesting book on *The Unity of Nature*, has some admirable remarks bearing upon this point. He shows that "anthropomorphism" (which he would prefer to call "anthropopsychism") is a phrase used opprobriously to condemn the conception which regards the being of God as to some extent analogous to man's reason, intelligence, and will. But this conception, so far from being absurd, is necessary and rational. We cannot describe the processes of nature without using "anthropopsychic" language. Darwin and Tyndall have used it ; and "those who struggle hardest to avoid the language of anthropopsychism in the interpretation of nature are compelled to use the analogies of our own mental impressions as the only possible exponents of

what we see." Anthropomorphism is, in fact, an ambiguous term. It may refer to *limitation* of God (as applied to the Greek mythology, which brings down the idea of divine beings to the level of human passion and sentiment, and so Mr. Collins applies the term in some of his remarks); or it may refer to the *expression in terms of human nature* of a super-human Being whose nature is conceived of as analogous to the highest part of that nature of our own of which we are conscious. To "de-humanise" God (if I may be allowed the expression with reference to language concerning the Divine Being) into a bare abstract "absolute," or abstract "infinite," so far from being a high view of Deity, is a very dim and unsatisfactory one, and a view which exhibits the divorce of intellectual from moral conceptions. The primitive view, *i.e.*, the personal view of God, is more true, and more complete, and therefore essentially more philosophical. All religions are based upon a sense of obligation felt towards a Personal Authority. This sense of dependence, which involves some sort of fear or reverence, is an essential and universal element of religion. Without it there could be no worship, no idea of priests or mediators, no sacrifice, no ascetic practices, no superstition, no idolatry. All these features of religions (and they are found wherever man has trod the earth) involve the idea of *personality*, *i.e.*, the moral idea of Being, as distinguished from, yet connected with, the metaphysical idea of cause and the physical idea of force. The very personification which characterises "nature-worship" points beyond the phenomena in nature towards supra-mundane BEING, and therefore to will, intelligence, purpose, which in one aspect may be termed "anthropomorphic," but in another view are naturally and necessarily regarded as "the Infinite" (*Aditi*), "the Boundless," "the Incomprehensible" (*Immensus*).

With this transcendent Being—*super-human*, but not *in-human*—men connect their ideas of personal responsibility and obligation—their sense of guilt—their fear of judgment—their prayers for deliverance.

What Max Müller has called *Kathenotheism*, in speaking of the Vedic religion, "the consciousness that all the deities are but different names of one and the same godhead," is an evidence of an underlying *monotheistic* idea which, as it may in one direction lead on to a pantheistic philosophy, so also seems to point back to a traditional revelation, or primary idea of God.

The spiritual basis of all early religions can be seen to be precedent to metaphysical theories, mythological stories, and polytheistic corruptions of worship.

Mr. Collins thinks that ancestral worship is due to "a primitive belief in the immortality of the soul." I hardly think that he is warranted in stating that men "began their religion in the full blaze of what is now the brightest hope of the Christian"; but that primitive man had a belief in the continuity of personal existence seems, independently of Revelation, to be a correlative to his belief in God. The reflex of God's eternal Being filled men's souls with at least an aspiration after life eternal, and some hope of it.

Another statement of Mr. Collins I should be disposed to question, viz., that "the primitive man must have had a most elaborate sacrificial worship"; but the subject of sacrifice is too large a one to enter upon here.

I think, with Mr. Collins, that the historical survey and analysis of old religions prove that by the side of any generation of philosophy we must place the fact of degeneration in religion. To this law of degeneracy all religions have been subject. In the twelfth chapter of *Unity in Nature*, which specifies some of "the causes of religious corruption," it is pointed out that "the same law has afflicted Christianity, with this difference only that alone of all the historical religions of the world it has hitherto shown an unmistakable power of perennial revival and reform." This historical phenomenon of degeneration as characteristic of all religious institutions seems connected with the undeniable fact that human nature itself everywhere testifies to a perversion of, and a fall from, a high original ideal. The tendency of human philosophising, if it be viewed apart from the Christian Revelation—is either to a materialism which denies God, or to an empty sentimentalism which alternates God into an abstraction, and dissolves religion into an unsubstantial, poetic emotion. It is Christianity alone that collects the scattered fragments of truth which scintillate in the most erroneous systems, and shows man that there is a Divine Purpose through the ages, and a Divine Goal at the end.

THE AUTHOR'S REPLY.

I do not know that it is necessary for me to add much to the discussion that followed the reading of my paper, except to thank Mr. James for so kindly reading it for me in my unavoidable absence. That it is a very imperfect summary of the kind of evidence to which it refers there is no doubt: but a paper must have its limits; and within those limits I chose only such illustrations as seemed to me at the time of writing it most typical of that evidence, and suggestive of further study. I may, however, say, with regard to some remarks of Mr. James and the Chairman, that while I certainly do not endorse all Max Müller's theories,—indeed, I have expressed my dissent from some of them, so far as I understand them, in my paper,—yet I do think that Max Müller's connexion of

Zeus with *Dyans* and the Sanscrit root *Dyu* is based philologically on such ample facts, and by such close reasoning, that it is very difficult to escape his conclusion.

On another point I should hardly agree with Mr. James in his exact statement of the case, as between the Jewish and Christian religions and those of heathendom. Is it strictly correct to speak of an utter want of homogeneity between heathen systems of religion and that which we know through the inspired pages of the Holy Scripture? to say, that the "comparison between them is simply like one between animals and crystals between which there are no points in common"? Is it not just the comparison of what is homogeneous between them that has led us to the conviction, that that homogeneity is due to a divine origin in the remote past? I do not believe, any more than Mr. James does, in the "Science of Comparative Religion"; but I should explain my disbelief on somewhat different grounds, namely, that I am convinced that none of those laws of the development of the religious idea, which are expected to be discoverable in human nature, and on which only a true science must be based, can ever be discovered, simply because they are non-existent. The science, as it is already prematurely called, is only as yet in its nascent state of comparison and classification: and comparison is certainly possible; the real discovery by comparison appearing to be, that the heathen religions, so far from being developments of human reason, are degradations of what was once equally divine with the revelation of the Bible.

I have been much interested by, and am very grateful for Canon Saumarez Smith's remarks on my paper. He accepts the general drift of my essay, but takes exception to two points, on which I venture to add a word.

Canon Saumarez Smith hardly thinks I am warranted in stating that men "began their religion in the full blaze of what is now the brightest hope of the Christian." The reference is to "a primitive belief in the immortality of the soul," which I have described as being the basis of ancestral worship. My contention is against the theory that man has worked out his own religious convictions. Canon Saumarez Smith seems to regard man's early conviction of immortality as only "the reflex" in himself of his knowledge "of God's eternal Being"—in short, that he believed in the immortality of the soul only as an inference. He believed in God's eternal Being, and as a correlative to this, without any revelation on the subject, himself drew the conclusion of his own immortality. I am disposed to go much further than this, and to claim the knowledge of the immortality of the soul as part of God's first revelation to man.

In the first place, I believe it impossible that early man could have worked out the idea of an eternal, personal God, with a character and attributes, such as we find described in the earliest known records of man's history, and identical with those of the God we Christians worship. Such a God could only have been known by His own revelation of Himself. And next, if God did reveal Himself to the early families of man, it is difficult to believe that, notwithstanding His revelation of His own Divine Being and character, and

to take a particular point, His eternity, He could have left man in entire ignorance of human spiritual being, so that man should have been left only to infer, or hope for, his own immortality, as correlative merely in his reason to his knowledge of God's eternity. If we believe that man could have known God, as unquestionably in very remote times he did know Him, only by revelation, we must also believe that that revelation could only have been intelligible in reference to man's own spiritual constitution. A revelation of God as to His own nature and character seems, therefore, to imply a revelation as to man's immortality.

This, of course, is *à priori* : but as we trace our way through man's religious history these convictions seem forced upon us. As we travel backwards we seem to reach a time, when we have escaped and left behind us such strange doctrines as that of metempsychosis, the Buddhist idea of an immortal *Karma* in place of an immortal identity of person, and other, surely manifest, perversions of original truth, until we find a simple belief in man's immortality, as for instance in the *Rig-Veda*, and other ancient records, some of which I have quoted. We are forced to the conclusion that man began his religious history with many broad and true principles, as broad and true in many respects as the principles that we bow to now, and amongst them the immortality of the soul. We conclude that man must have begun well, from whatever cause. It is significant too that we can trace not a few of these primitive truths, and with them the doctrine of the immortality of the soul itself, through their subsequent decay and degradation under the manipulation of man's (so-called) philosophy. This alone would seem to stamp them with a noble origin. If that origin was in human nature, and not above it, then human nature has philosophised away many of its own grandest thoughts. It may no doubt be so, for men have destroyed the noble works of their ancestors many times in the world's history. But the doctrine of the immortality of the soul seems to claim an origin *above* man's mere intuition or reason. And I am the more confirmed in this view by the words of Moses. If we take the Pentateuch only as a very early expression of religious belief (and most will concede that it is at least that), we are at a loss to understand the intention of the writer in his description of the commission to Adam in the garden of Eden, and the nature of the doom pronounced upon him—we cannot connect together the "image of God," the "tree of life," the "living for ever," the death described as being the "return" of the body only "to the ground," except on the supposition of at least the writer's belief in the intrinsic immortality of man's soul. And, if the words describe the actual facts of an intercourse between God and the first man, the words addressed to that man could only have been intelligible to him, surely, in proportion to his apprehension of the nature of his own spiritual constitution, and its prospects. He must very early in his own history either have concluded from his own reason that his soul was immortal, a result implying in him already an intellectual perception which many of his descendants might not be capable of sharing ; or he must have received that knowledge as part of God's revelation to him. If, as I believe, the latter be the true suppo-

sition, and if the knowledge of that revelation did not die with him, then we find, what we should expect, a more unclouded view of the immortality of the soul the further we go back in man's history, pointing to what we surely must reach at last (as in the well-known creed of Job, for whom we may claim at least some antiquity, we do reach it) namely, what I have ventured to call "the full blaze of what is now the brightest hope of the Christian." But I dare not trespass longer on this point, except to add, what perhaps is not unimportant in this connexion to the Christian student, that our Saviour's reply to the Sadducees (Matt. xxii. 29-32) must embrace the doctrine of the immortality of the soul as underlying the whole of the Pentateuch, and of God's revelation of Himself to Israel. So deeply buried a foundation must have been one of those things without which a revelation of God to man was impracticable, if not impossible. So that, in this light, we can hardly regard it as a matter left to man only to infer if he could.

On this belief in the immortality of the soul I have based ancestral worship. I believe strongly in the value of analogies in the study of man's history: and we have the analogue to *pitri*, or ancestral, worship in the saint-worship of later times. The basis of the later worship is the fact that the immortal part of the good is after death in the presence of and communion with God: the *pitris* were disembodied spirits living still in the presence of Deity, to whom a portion of the sacrificial worship, originally due only to the Deity, was already transferred when the earliest of the hymns of the *Rig-Veda* were written. There is a very striking aphorism, and one that has impressed many minds, in one of Frederic Robertson's sermons; it is the expression of the "principle, that no error has spread widely that was not an exaggeration, or perversion, of the truth." What was the truth, of which ancestral worship was the perversion? Was it not the approachableness of God, according to the character of the first revelation of Himself to man? Shall we say, it was the divinely-revealed anthropomorphic or "anthropopsychic" idea? Arguing here according to the analogy of well-known facts in the modern history of man, when the "anthropopsychic" character of God—the only character under which the Divine could possibly be realised by man—was lost, or clouded, perhaps by teachings similar to those of Mr. Herbert Spencer, man's nature still needed the human in his worship—the sympathy, the kindness, the love; and the approach to the Divine began to be, as in later times, through the human itself. Thus the sacrificial worship, due originally to the Deity, began to be transferred to the spirits of the departed. If this be the true account of the origin of ancestral worship—and it has at least a most striking analogy in its favour—it could only have arisen upon the knowledge, or conviction, of the immortality of the soul, and its more immediate communion with the Deity.

Canon Saumarez Smith is also disposed to question another statement, that "the primitive man must have had a most elaborate sacrificial worship." Briefly I conclude thus. When we trace back man's religious history, we become more and more conscious that we must be treading amid the *débris* of a once divinely-inspired religion; nay, we can often, with the certainty

of the geologist in his study of the rocks; trace the very causes of the decay we see around us, from our knowledge of man as he is, just as we know how the "glacier-mills" at Lucerne were formed, from what we have seen in a modern river-bed. And this is more especially noticeable when we look at the externals of religious worship. Thus, in studying the sacrificial systems of the Hindus, Assyrians, Phœnicians, Greeks, Romans, and other nations, we cannot but be struck with the multiplicity of detail: and when each detail is examined it is found, almost without exception, to be either a more or less perfect, or a manifestly-degraded representative of some detail, the analogue of which we know in the divinely-given Mosaic Dispensation. So that, in fact, there are but few features in the sacrificial system of Moses that are not discernible, more or less complete, in the ancient sacrificial systems of the heathen world. I know no way of accounting for this but by supposing a truly elaborate system of sacrificial worship in the far past, of which these many details are the remains. Elaborate it must have been, or such varied detail could not be found in what we may call its fossil. Divinely given too it must, I think, have been, or its remains could not indicate an original, analogous in so great a degree to the sacrificial system described in the Old Testament.

ORDINARY MEETING, APRIL 13, 1885.

W. N. WEST, ESQ. (HON. TREAS.), IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

MEMBERS :—Rev. E. C. d'Auquier, M.A., Ramsgate ; His Excellency S. G. W. Benjamin, United States Minister, Teheran ; S. W. Francis, Esq., A.M., M.D., United States.

ASSOCIATES :—Rev. H. Carrow, Weston-super-Mare ; Rev. A. T. Clark United States ; Rev. F. R. Elder, B.A., New South Wales ; Rev. Principal H. C. G. Moule, M.A., Cambridge ; Rev. W. Nicholson, M.A., St. Petersburg ; Rev. J. R. Sutherland, A.M., D.D., United States.

The following paper was then read by Mr. C. HASTINGS DENT, C.E., F.L.S., the Author being unavoidably absent. No discussion was taken on pages 269 to 281.

HUMAN RESPONSIBILITY. By the Rev. G. BLENCOWE, of Wakkerstroom, Transvaal, South Africa.

JOHNSON defines responsibility as “accountability, or liability to answer.” Hence, wherever there is responsibility, there is subordination and inferiority. A supreme or a perfectly independent being is responsible to no one ; but in the measure in which our being and possessions are derived from another, and in which they are sustained by his continued operation, we are plainly liable to answer to him. The mechanic, who receives the material for his work from his employer, is answerable to him for the appropriate use of it. The farmer, who commits his stock to the care of his bailiff, requires from him full tale of all delivered, and of all the increase. The primary question, therefore, with respect to man is, Are we self-originated—are we independent ?

How came I into being ? There was a time when I was not, another time when the first cell of my complex body began to collect or protrude other cells, and to weave, by occult and mysterious skill, the wonderful structure which I now possess, and by which I am joined to and form part of the visible universe. There was also a time when I was first conscious of myself, and of objects around me, not myself, from which moment my consciousness and my thought have continued until now, increasing my knowledge of myself and nature, and thus opening new sources of enjoyment and power.

But I had no choice in my beginning, nor in my construction, nor in my birth, nor in my endowments. All were without even my concurrence. I did not make or place the object which first evoked my consciousness, nor am I the author of those objects which by continual operation increase my knowledge and augment my power.

For my being I am immediately indebted to my parents, but not to their direct and immediate volition. For, when we compare human and brute procreation, we find a lack of uniformity in the former, which shows that a superior authority to our immediate parentage must be the source of life. All others have come into being in the same manner as ourselves; hence our relations to others and theirs to us are independent of our own will, we have all been without the possibility of choice, and, therefore, are plainly under the direction and at the disposal of some super-human authority, possessed of power to fulfil his own purposes.

Here is a chain of accountability. First, to the author of our nature and the giver of our life. When a man constructs a machine, he has a right to its use and to dispose of it as he pleases. He also is presumed to have had some definite purpose in its construction, and the right, therefore, to employ it for this purpose, and to forbid its use in any way which will spoil or deteriorate it. And this right is considered sacred and infeasible, in proportion to the excellence and value of the instrument constructed. How, then, can bounds be set to the right of the Author of a nature like ours, with all its wealth of intellect, emotion, and will, which He has placed in conditions calculated to call forth every power to its full strength, to use, or to require its use, according to His own purpose?

But here we see the special distinction of humanity. We have a body, a wonderful and exquisite machine,—by which we receive instruction and various other benefits from the material universe, and by which we can act upon it, for good or evil,—but we ourselves are more than, and different from, a machine, however perfect. We are not instruments, as our body is, but agents. That is, we can see the nature of any and every act, the consequences which follow from it to ourselves and others, and the reasons why we should do it or leave it undone. And we are further able to determine, of and from ourselves, whether we will act in harmony with our nature and relations or not. We are, therefore, as much bound to answer to our great Author for the proper use of the personal and relative endowments committed to our trust as the driver of a locomotive is for the use of the engine put into his hands.

But our responsibility to the Author of our nature is not

bounded by our relation to Him simply as His creatures. We cannot have come into being without parents and other family relations; we cannot give free scope to our affections, nor develop our intellect, nor act adequately, nor secure full bodily enjoyment, but as we form part of a community, the various members of which contribute to our improvement. And, as communal life is not a separable accident of humanity, but a necessity of our nature, we are bound to answer to its Author for the general good, so far as it is in our power to promote it. And it further follows that, as we are communal by the very constitution of our nature, we can by no means relieve ourselves of these obligations to our Author to live natural, that is, communal lives,—lives in which we shall seek, not our own good only, but the good of others also.

We are placed,—not have placed ourselves,—in this world, and in this vast and wonderful universe, which we have not made, which we cannot modify, not one of whose properties we can change, and to which we cannot add an atom. But we derive all our support from it, both as to body and intellect. Not only are its material resources unlimited, so that, by its orderly alternations, food, clothing, and every other requisite for happy and full physical life are furnished, generation after generation, but its structure and combination are so various, and multiform, and recondite, that it is capable of revealing to us, with continually-increasing clearness and breadth, the mode by which its great Author works. Thus it brings our intellect into contact with His, and teaches us the same order and breadth of thought as that which by a supreme volition has produced all things.

We know that the most exquisite skill of the mechanic is only a faithful copy of the order of the world itself, in the application of material properties in a material substance. All pure science is but a knowledge and application of the properties of number and space in their multiform combinations and relations. The deductions of the chemist are but the discovery of some of the secret processes of nature, or rather of its great Author in His material operation; while the artist, in his most noble and original creations, is simply using the material which the Creator has provided after His own method. Thus, the world is not only our habitation, but our school and our storehouse. Without it our body would die and our mind become inert.

But we are not only dependent on the great Author of all for the production and furnishing of this world, but also for the constant operation by which its forces are maintained, its substance renewed, and its life preserved; for each of these

classes of facts requires similar operation for their continuance to that required for their original production. We cannot conceive of force but as a personal act; our idea of it is derived solely from the effort necessary on our part to produce motion; and, as we find that motion does not belong to matter, either in the atom or the mass, but is superimposed, so continued action is necessary from the original source for its continuance. We are unable to think of continued motion without continued energy. And, when we attempt to calculate the sum of the motion which is going on every moment in the universe, we find ourselves as utterly unable to approach a true result as we are to attain to an adequate idea of the mode of creation out of nothing. Yet there the motion is as a necessity of universal existence, and there, at its back, is the energy or force which is its cause: too vast and too wonderful for our comprehension.

But there is one side of this question of which we must not lose sight. We are evidently not in an orphaned, a forsaken world; but we have present with us everywhere the hand that formed, now sustaining all things.

This incessant operation is necessary for the continued renewal of the earth as the habitation of man. Without day and night, summer and winter, the disintegrating atmosphere, and rain and frost, the fertility of the earth could not be preserved, and its utility to man would cease; and we find ourselves unable to increase its utility but by taking advantage of the order first established, and by working on the same lines, after the manner of the miller who diverts the stream to his own wheel. He cannot create the stream, he can originate no force, but only employ what the great Operator has already provided. In like manner, all recuperative operation is not of human origin, but is simply the application of recuperative power lying ready to hand by the prolific providence of the Author of all.

Life requires certain conditions. The most elementary vegetable cannot exist without light and water. The animal must have organised substances for his food, and a properly-mingled atmosphere to breathe. Small changes in either are fatal. The world is full of life, full beyond possibility of numbering, and it does not fail. If we were able to form a judgment, we should incline rather to the conclusion that it has been increasingly abundant from the beginning. But if we cannot enumerate the lives, or even the varieties of life, how much more are we unable to tell all the observation, and the care, and the varied and constant operation which have been necessary from the beginning to perpetuate it.

Thus we are brought face to face with a mighty operating personality, all whose work tends to the preservation, and development, and perfecting of the universe; of which, so far as this world is concerned, man is the head and the only being capable of understanding the Author's purpose, and of employing the vast resources He has provided for our use according to that purpose. This greatly increases the range and the force of our responsibility. The man who is placed at the head of a grand operative establishment, having a large capital and many subordinates under his control, is bound to greater carefulness, diligence, and fidelity than any one under him. By this rule, how truly boundless is our responsibility to the Creator and Upholder of all things. We can conceive of no capability of our nature, no relation we sustain to others, and no donation of His providence, for which we are not bound to answer.

But is there a Creator? Have not all things come into being by the independent operation of matter, and from properties inherent in itself? Before we can answer this question, we necessarily meet another. How came the material substance of the universe into existence? It could not produce itself, because, if capable of acting, it could not act before it existed, and especially so mighty a work as creation could not come from a non-entity. But, in nearly all the discussions on the supposed action of matter, a hidden fallacy lies. Matter is spoken of as though it were one homogeneous substance, possessing unvarying and uniform properties and powers, and therefore capable of simple and immediate action. It is, however, well known that this is not its true character, but that the substance of the earth consists of sixty-three different elements, every one of which has a fixed and unchangeable nature, utterly incapable of transmutation, and some of them have an unalterable incompatibility with others; so that united action, for any such purpose as the creation and arrangement of the substance of our earth, is simply inconceivable. We could as well suppose that lions, tigers, bears, sheep, deer, and cows could unite in any undertaking for the general good. And there is equal difficulty in supposing that one element could produce another.

If hydrogen were the first which evolved itself from nothingness, how could it have produced gold, or iron, or carbon? If we suppose them all to have come into being spontaneously, who fixed the order of birth, and whence came the adjustment of proportions in the mass, so that

carbon is abundant and gold scarce? Whence did the affinities come? Did hydrogen construct itself on purpose to be able to take one atom of oxygen into union with two of itself to produce water? And, when both were self-made, whence came the pressure by which their combined bulk was reduced eighteen hundred times to make the great ocean of water? How were the diverse atomic weights determined, so that lithium is but seven, while bismuth is two hundred and ten? These are but a few of the thousands of questions which claim an answer before we can admit the independent action of matter.

And the difficulties are only removed a step further back, by the adoption of the only alternative which is possible to the Materialist,—the eternal existence of matter,—while that theory carries with it certain grave difficulties peculiar to itself. In the days of old, when matter was thought and spoken of as one simple whole, it was possible, with at least a show of reason, to argue for its eternity, but no man can contend for sixty-three eternals. Geology shows that, so far as our earth is concerned, there has been a constant process of disintegration and re-construction from the beginning, every series of which is capable of measurement in time; and the most liberal donor of duration can go back to a precise and definite beginning. Astronomy also teaches us that the solar system can only have existed for a limited and definite period, while all through its existence the motions of the several members, both in direction and speed, have been ruled by strict mathematical law. But such science can scarcely be attributed to an assembly of unconscious and incompatible atoms. Thus we are compelled to look for some intelligent creator and distributor of matter in its various forms, adequate both in knowledge and power, to account for the existence and adjustment of the substance of the universe.

But we are now met by a theory which, taking matter as already existing, supposes it to possess inherent power of development into all the forms of life we now see. An initial difficulty here is the fact that, in all the changes taking place in mere matter, a strict law or order is, and must be, observed. In all chemical combination strict laws of quantivalence and proportion prevent any more than a definite and invariable number of specific atoms uniting to form any substance; while other laws compel the union of the appointed number when brought into juxtaposition. Thus, matter, pure and simple as we find it in the atom, is incapable of independent action, but follows an invariable order, which has existed ever since matter existed. Development or progress, in material

combination and form, in and from matter, is therefore impossible. How, then, is it possible for matter, which cannot change the form of its own crystal, to produce life? Matter nowhere acts, but is acted on by forces exterior to itself.

Life in the simple form of the vegetable sack is totally distinct from and above all chemical force, which operates only by superimposed law. The crystal can only increase by accretion, which, however great, cannot alter the position, shape, or size of the one first deposited; but the plant selects from the atmosphere, the earth, and the light, those things only which it can assimilate, and by taking them into itself increases its own bulk, matures its strength, and propagates its kind. Here, therefore, we have powers which are nowhere seen in mere matter, and which are certainly of a higher order; and what matter has not it cannot give. If this be so with vegetative life, how much more with animal life, where we have in its most minute forms the wonderful power of volition, and in its progressive stages various vital and mental qualities, which are of an entirely different and much higher character than any vegetative force, and therefore much more impossible to mere matter.

But, supposing life in its simplest forms already to exist, we are taught that it has gone on improving into more complete forms, until the present species have come into being. If this has been so, it is matter of history; but we find no evidence of the existence of only imperfect and elementary forms of life in the earliest deposits, gradually growing up to perfection in the last. Then, as now, various gradations of complexity in structure, each suited to the conditions and purpose of life, existed as contemporaries. But, in all past times, we have no clear example of an animal in the condition of change from one species to another,* nor can we conceive of such change by any vital analogy of the present time. But, if the capability of such progress or development is involved in the very idea of life, as the theory supposes, it would not touch our present argument. For, as we have no example of spontaneous generation and cannot conceive of it, so we must, in this case, suppose this to be the mode by which the Creator chose to work; as the first life with all its potentialities must have been His gift. This is implied in the term evolution, which necessarily supposes involution, as potentially full as the evolution. "What comes out in the web must first have been in the loom, and the warp, and the weft." So

* Professor Huxley's argument as to the hipparion is very far from a proof.

that, whether our Creator chose to bring our body to its present state of completeness by a process nearly as long as that by which He fitted the earth for our abode or fashioned it according to the counsel of His own will, by the word of His power, when "He spake and it was done, commanded and it stood fast," in either case, He is our Maker, whether the process of making has been long or short.*

This, however, must not be taken as an acknowledgment of the correctness of the theory in question, which we do not accept because of the difficulties and contradictions which it involves. First, we have no authentic example of such transmutation as this theory requires, so that it is as yet mere theory. Then, we find that we have at present existing almost every conceivable variety of life, from the simple sack up to man, and we see no case in which these lower forms are passing into the higher. Darwin himself informs us that the earth-worms have retained their lowly but useful position from the first till now; nor can we conceive of the existence of sufficient intelligence in the lower forms to attain, or even aspire after, a higher. How could the simple sack, whose power of absorption extends over its whole surface, discern the advantage of tentacula, a mouth, and an alimentary canal? and, if he knew their benefit, how could he proceed to their production?

The sum of the whole, then, is:—1. Pure materialism is impossible. 2. Of evolution we have no proof and no authentic example. 3. Creation, pure and simple, is the only doctrine that meets and removes every difficulty and covers the whole case; while it is impossible to prove it false. Adopting the mechanical maxim of following the line of least resistance, we accept the infinite Creator, as attested and proved to us by the whole assemblage of mundane facts. We are His creatures in His world, sustained by His constant providence, and therefore we are accountable to Him.

A notable confirmation of this accountability we have in the faculty of conscience, which is possessed by all men. This power or faculty is an immediate perception or intuition of duty, which, although in nearly all cases it is capable of confirmation by subsequent processes of reasoning, is not the result of reasoning in the first instance, but springs at once

* This conclusion is the more necessary, as the accepted description of the origin or cause of evolution is, "The tendency in any given direction which gives a greater chance of life to the individual, but with which the will or the intelligence of the individual has nothing to do."

and in full force in the mind. In this perception of duty is involved the obligation of fulfilling it, which is accompanied by complacency on obedience, and by a sense of condemnation and remorse on disobedience. This is not an acquired but a primary faculty of our nature, and remains in active operation in all but the most degraded.

The force of this testimony to our responsibility is sometimes sought to be evaded by reference to the diverse decisions of conscience in different persons. It should, however, be remembered that this diversity in detail as to practice may, in all cases, be traced to previous error as to our relations to others. Thus, the ruler who has adopted the now-exploded notion that he has an unlimited right, by divine donation, to command his subjects after his own pleasure, and that any resistance of his authority is fighting against God, will feel little or no compunction in robbing or oppressing them. But although such falsehood, when taught in and from infancy, or accepted from common and popular opinion, may, to a great extent, pervert the judgment and dim the perception of duty, yet it remains a question whether any human being can plainly invade the right of others without compunction. And it is certain that no man of ordinary mental capacity could adopt principles and rules of action palpably in violation of the rights of others without self-condemnation.

It must also be remembered that we cannot learn the decision of another man's conscience by his actions. Selfishness, avarice, pride, and all other evil dispositions and passions contend against the pure, benevolent, and just decisions of conscience. We can only be directly certified concerning its operation by our own experience, and thence we learn that, although its decision may sometimes be silenced by the clamour of passion, and at others may be set aside by the fallacies of a proud or a grovelling selfishness, yet the whip and the sting never fail to fall and to pierce when the voice of the inward judge is disregarded. The great broad facts with respect to the operation of conscience are these,—it perceives obligation and duty, it requires obedience to its dictates, and does not fail to bless or curse as they are regarded or contemned.

It is also especially worthy of consideration that the verdict and judgment of conscience are primarily in the name of, and are ultimately directed to, the great Author of our being, and our present Ruler. For, although, in most of the cases on which the judgment of conscience is recorded, the action has respect immediately to our fellow-creatures, yet the judgment proceeds on the assumption that, independent of and above

man, we have been placed in relations to our fellow-creatures by a Supreme Authority, and that these relations which He has established we have observed or violated. Hence it does not matter whether our fellow-man be cognisant of our action or not, we are alike self-condemned or self-applauded in the presence of the great King. But this could not be, unless we stood in conscious relation to Him as the rightful Supreme Ruler.

This inward testimony to the existence of a Supreme Ruler is universal. Hence all nations, as far back as we can trace their existence, have had a religion and a God. And the more primitive their condition the more precise and definite their views on the relations they sustain to the Creator and Upholder of all things. During the present century the ancient records of Egypt, of Assyria, and the whole of Mesopotamia have been disinterred and read; researches in Persia have brought to light the condition of the whole Iranian tribes prior to the reformation of Zoroaster, and as its consequence; while the Vedas,—the religious poems of their kindred Indian Aryans,—have been written and translated; and profound researches into the ancient literature of China have unveiled the doctrine and the worship of the Chinese before and since Confucius; and the result of the whole is, that we find in these nations, from the time of their existence as separate and distinct communities, religion,—after the special manner of each,—was the primary and most prominent peculiarity of their combined action.

In Egypt, religion entered into the entire social and individual life of the nation, regulating every private action and requiring a varied and complete virtue, which furnished terms for every Christian grace to the Coptic translators of the New Testament. While it ruled the people, it controlled the king, who was the high priest of the Supreme God. In Assyria a pure and dominant despotism prevailed, such as we might expect from the successors of him who was a "mighty hunter before the Lord." In the records of the Mesopotamians, therefore, we see only the king, who undertakes all his works, builds all his cities, fights all his battles at the bidding of the God, his father, and to establish his worship. The Iranians, as might be expected from their nomadic, and quiet, and contemplative character and habits, returned to the pure and simple worship of the Creator, whose only symbol was brilliant light, and with whom no moral corruption could abide. In Ahurô Magdão they partly beheld the varied, full, and limitless perfection which the Jew saw in Jehovah; hence their morality embraced every devout, individual, and social virtue,

enforced by present divine favour and blessing, and by an everlasting reward. Their Indian kinsmen seem to have made religion the stay and the luxury of their life. So far as we can now see, they had fallen under the domination of an oppressive priesthood, but still they struggled after the free and friendly intercourse which their ancestors enjoyed, and which for many generations was embalmed in the hymns which they continued to sing when the experience they embodied was forgotten. But one thing is conspicuous throughout. Religion was the business of their lives. The Chinese, from their first appearance as a distinct people, had clear conceptions of the existence and present dominion of the Creator, which they retain to this day, although their superstition has peopled the heavens and the earth with multitudes of subordinate or ministering spirits who fulfil His will, so that direct worship is now only paid to the Supreme Sovereign by the emperor on behalf of the whole empire represented in their solemn services. The Phœnicians surpassed their neighbours in the severity of their worship, offering human sacrifices to appease the anger of God, which shows the strength of their conviction as to the reality of His existence and rule.

We cannot conceive of a religion which does not suppose the dependence of the worshipper upon his God, and also of real intercourse between them; at any rate, so far as the offer of worship by man and the bestowment of benefits by God; and in the ancient nations already mentioned, that God was the Creator, notwithstanding the grouping of subordinates around Him in subsequent times. Nor can this conviction of the existence of a divine Creator and Ruler be ascribed to the infancy and consequent immaturity of these peoples. First, the definite precision of the doctrines forbids such a supposition, and the mechanical, scientific, artistic, and social proficiency of these nations at the time these precise and sharply-cut decisions were commonly held, shows that they were not lucky guesses of the ignorant, but the permanent opinions of thoughtful men.

M. Le Page Renouf, in the *Hibbert Lecture* of 1879, quotes the late M. Emanuel Rougé's mature judgment concerning Egypt, and declares that no scholar is better entitled to be heard on this subject. "No one has called in question the fundamental meaning of the principal passages by the help of which we are able to establish what ancient Egypt has taught concerning God, the world, and man. I say *God*, not the *gods*. The first characteristic is the unity most energetically expressed,—God, one, sole, and only,—not others with Him. He is the only being living in truth: 'Thou art

one, and millions of beings proceed from Thee.' He has made everything, and He alone has not been made. The clearest, the simplest, the most precise conception. . . . The belief in the unity of the Supreme God, and in His attributes as the Creator and Lawgiver of man, whom He has endowed with an immortal soul,—these are the primitive notions."

Dr. Legge, in his *Lectures on the Religions of China*, shows by a careful analysis of the primitive characters by which the Chinese fathers expressed their theological doctrines,—and which he says "puts us *en rapport* with them fully 5,000 years ago,"—that at that remote period their idea of the Deity was Supreme Ruler, "whose providence embraces all." He then proceeds to say that "T'ien has had much of the force of the name Jahve, as explained by God himself to Moses; T'ien has represented that absolute deity in the relation to men of their lord and governor. T'ien was to the Chinese fathers, I believe, exactly what God was to our fathers, whenever they took the great name on their lips." Zoroaster is supposed to have lived about the time of Abraham, and he taught most distinctly the unity, supremacy, spirituality, benevolence, and righteousness of the Creator and Governor of all. But he only professed to be a reformer, bringing back the people to a primitive faith and practice.

Professor Th. Ribot, in his *Contemporary English Psychology*, page 241, says: "The legislations of Buddha, of Solon, of Lycurgus, of Confucius, of Mahomet, were not the pure creations of their brain. Confucius declares that he follows the traditions of his ancestors. Mahomet states that he is a restorer. Buddhism is born of an effusion of hearts towards charity, tenderness, and the doctrine of inaction. Solon and Lycurgus gave a body of ancient Ionic and Doric institutions. All these men have told the secret to the world." And that secret, according to Professor Ribot, was, that these laws for the regulation of human action were the result of the combined testimony of individual consciences; thus showing that the great legislators drew the material for their laws from the operation of that faculty in man which directly and intuitively recognises our responsibility.

In more recent times, we find the Greeks and Romans in all their public acts besought the aid of their gods, and in their calamities and failures saw the divine wrath, and proceeded by the appointed means to turn it aside. In our own time, we see the most civilised and enlightened nations are the most religious, while the most honourable, virtuous, and intelligent men of those nations are proportionately devout,

and they confessedly derive their principles of honour, and their power of right-doing, from their devotion.

The force of this important series of facts is not invalidated nor weakened by the consideration, that in some of the cases referred to the objects of worship were spurious; but it is rather strengthened by the fact that, so dominant is the sense of need, and so prevalent the persuasion of the possibility of access to God, on whom we depend, that when all true knowledge of Him was lost, and only false substitutes for the living God existed, which could not help, yet, even then, the practice of worship was continued through successive generations of disappointment, all of whom were ready to ascribe the failure to the imperfection of the worship rather than to the impotence or the indifference of their gods.

We have no other peculiarity of humanity equally universal, operative, elevating, or permanent. How can we account for it, but as the expression of a universally-felt need of our nature, prompting to acts of reverence, submission, trust, obedience, and love, mingled with appeals for help, and grateful thanks for past blessings? We recognise the uneasiness of hunger and thirst as a natural provision, securing the proper nourishment for the body. And we have equal reason to look upon this pressing sense of spiritual need, and the aspiration to one Supreme King, as a natural provision for the spiritual life of the soul.

There plainly can be no insuperable difficulty in the way of intercourse in the highest sides of our nature with its Author, when we find our intellect in constant contact with Him. Many things are at present by our philosophical teachers said to be unthinkable, but far more unthinkable than any philosophical impossibility is the constant sight of operation without an operator. No human mind can think of the one without the other. We not only are able to recognise the operation of the Creator, but we can also learn the modes of His operation; our only difficulty is in the vastness of His work. We can calculate the actual operative force which the divine volition puts forth in the various members of the solar system, in the attractive force of the different chemical affinities, in the great integrating power of gravitation, in the motion of light, in the capillary attraction energetic in every vegetable tube over the surface of the earth. We have been able to employ the sun to paint our portraits, and the lightning to carry our messages round the world; while our own work can only be done as we direct to our own ends the force already and continually operating.

Thus we find ourselves in continual contact with the Almighty operator, and, so far as our intellect is concerned, unable to exercise it but upon His work. But this could not be if we were in a condition of necessary and absolute ignorance of God. The cup cannot contain the ocean, but it may be filled from its water. So we are unable to grasp as one magnificent whole the boundless and varied operation of the sustainer of all things, much less can we adequately conceive the breadth of the attributes of His own infinite nature; but we can see in His work skill and power such as we ourselves can exhibit in a less degree. Nor have we any difficulty in seeing benevolence in the boundless and varied life with which our earth is peopled, all the arrangements for which tend to the happiness of the living. In like manner, we find that when men live in any way unnatural lives their action tends to their own weakness and decay, while the violation of all social obligation destroys confidence, so that lying, deception, theft, and every other trespass on the rights of others tend to the disruption of the bonds of society, and require suppression, that full communal life may remain. These facts, which are invariable, as plainly show us the righteousness and truth of the Author of our nature, and the reality of His moral rule, as the physical universe shows us His skill and power. Thus it appears that a knowledge of God, of His moral character, and of our obligation to do His will, may in some measure be learned by His government of us.

But as all such knowledge is rudimentary, and requires long time and patient thought, as well as large range of observation, and, after all, is only of authority to the individual who has thought it out for himself, we require some more certain, extensive, and authoritative teaching, that we may from the first live natural lives,—that is, lives in accordance with the requirements, capabilities, and obligations of our nature. This need becomes more imperative from the fact that we begin life in a condition of total ignorance, and have each for ourselves to acquire such knowledge of external things as will enable us to prolong and improve our life in this world; and this in many cases so engrosses the attention as to leave no room for anything besides.

Not only is there nothing in human nature to prevent such a revelation of the divine will, but our relations of subordination and dependence,—the grounds of responsibility,—make it likely that such revelation will be granted, and that, in some way, certain and conscious intercourse with the Father of our spirits will take place. We know of no being but God with whom we as men can have free interchange of

thought and emotion, while, as we have already seen, if we act effectually, we must act after His manner. There is, therefore, no reason in the nature of things, in what the universe teaches us of God, nor in our own nature, to make such intercourse unlikely, but everything to make it extremely probable.

No man of ordinary intelligence would erect a large manufactory, furnish it with machinery and all material necessary for the work to be done, and then commit it to the charge of totally ignorant people to conduct the operations, and leave them without supervision. Unless he declared his will with respect to their action, he could not expect his plans to be carried out, and the *employés* would certainly not be to blame for the failure. How much more is it impossible for the Maker of all things to bring into existence a race of intelligent agents, and place them at the head, and in possession, of a world full of His creatures of inferior nature, and after all leave them without information concerning His will and purpose towards them. Nor can we conceive of His having created a race so richly endowed with emotional capacity, and after all leaving them without a knowledge of Himself, the only object capable of calling forth the full strength of these emotions; particularly when the emotion is not a separable accident of the nature, but is woven into its entire texture, influencing every volition, and prompting to every action.

The force of such arguments as the above, which appeal to reason and common sense, is often evaded by bringing against them the terrible charge of being anthropomorphic. The alarm is created by the use of the long Greek word; if it were simply translated, and the harmless word *human* took its place, its power to dismay would depart. There is wonderfully terrific power in long Greek words. And, when we observe the solemn awe with which the charge of being anthropomorphic is generally brought, we cannot help recurring to Austin Caxton's adventure with the wild bull, which he thus describes, "Luckily I had the umbrella, and I sprang it up and spread it forth in the animal's stupid eyes, hurling at him simultaneously the biggest lines I could think of in the first chorus of the *Seven against Thebes*. I began with '*Elede mnas* ΠΕΔΙΟΠΛΟΥΤΟΣ'; and when I came to the grand howl of 'Ιὼ, ἰὼ, ἰὼ, ἰὼ, the beast stood appalled as at the roar of a lion. I shall never forget his amazed snort at the Greek. Then he kicked up his heels and went bolt through a gap in the hedge." In like manner, when the grave charge of being human is brought in Greek, instead of boldly affirming it, some who know better, appearing to think that there must be some evil lurking under

the outlandish word, begin to defend themselves against anthropomorphism.

Plainly we are incapable of anything which is not human; our thoughts, emotions, and actions are all human, and nothing but human. But the gentlemen who bring this charge do so avowedly for two reasons. First, that all such modes of thought are inadequate to produce any knowledge of God; and, secondly, that they are derogatory to the divine nature. But it must be remembered that their God is not the God of common men. He is not the Creator and Sustainer of the universe, but an abstraction of the human intellect, who is presented to us as the Absolute, the Unconditioned, the Infinite; each and all of these and similar terms conveying the notion of an existence without attributes, without relations, without thought, without action, and therefore, to all normal human thought, without being. And this they virtually acknowledge, in declaring that all anthropomorphic,—that is, human,—modes of thought cannot apply to him.

Nothing can more clearly show the non-natural, and, therefore, worthless character of such speculations, than the acknowledgment that human thought cannot apply to such a conception any attribute of reality, as, indeed, it cannot. How can we conceive of an infinitude which fills immensity, and yet is nowhere; which comprehends all excellence, and yet has no particular virtue or power? Such a thing is simply a human creation, and the creators find their production so full of contradictions and absurdities, that they are unable to present it in an intelligible form to others. But instead of acknowledging their failure, as normal human modesty would suggest, they repudiate human language and human thought, because they reject the monstrosity. But let us never forget that the Absolute, the Unconditioned, the Infinite of modern philosophy has no existence but in the minds of the philosophers themselves; and there we may leave it, without any alarm for the consequences.

But, while they amuse themselves with abstractions which are delusive and perverting, let us remember the Living God, our Maker, and the bountiful Donor of our blessings. And, while we keep our eyes open to all the operations of His hand in the physical sphere of His work, let us not fail to mark the effects of human action under His government, both on the actors themselves and on others also. Thus we shall learn much concerning His moral character, which will instruct and help us in our endeavours to walk uprightly before Him. But the more we study these questions, and the greater pro-

ficiency we make, the more deeply shall we feel that some further knowledge of Himself and the relations in which we stand to Him is necessary for us.

We have already seen that we can only think of the Creator according to those laws of thought by which we think of other persons and things. It, therefore, follows that any communication from Him must be brought down to the human level. There seems to be no difficulty in this, inasmuch as all His work in the material universe is open to our comprehension. But here a question arises,—How are we to ascertain that the communication professedly coming from Him does really so come? If it be merely local, temporary, or individual in its application, all that can be considered necessary is the assurance to the person to whom it comes that the speaker is God. No improbability, no difficulty can possibly exist in any communication of the Creator with His creatures. Several such special, individual revelations are found in the Scriptures of the Old and the New Testament. Such communications, however, cannot meet the general need, nor would solely individual revelation be in harmony with the Creator's mode of operation in material and secular things. A law for the race must be publicly proclaimed, and there must be unquestionable evidence that He who speaks is divine, or the speaker must be attested as a divine messenger. We cannot suppose that less than this would be done by God, and certainly less ought not to be accepted by man. Otherwise we might be following lying spirits, and not the Spirit of God. With such assurance we may rest content.

What, then, are the facts with respect to the Christian revelation? We find them cluster around two persons,—Moses and Jesus of Nazareth. Moses is our authority for the records of all preceding revelations; we must, therefore, look for an attestation of his character and office, of equal certainty to the importance of the position which he occupies with respect to the world. We see a personal call to his important office in the appearance of God to him in the burning bush, in which he has an assurance that the Creator would appear in the government of His people, in all the plenitude of His infinite, necessary, and eternal being, of which He gave a pledge in assuming the new name Jehovah. This must be considered as the pledge, the promise of all that followed. This, however, immediately concerned Moses alone, and was the assurance to him of that full divine revelation which by him, in its continuous progression, should manifest God in the flesh. This was necessary to give him the confidence needed for the special and dangerous work he had immediately to do.

The pledge was redeemed; Moses passed through all the danger and difficulty of his intercourse with Pharaoh, not only without harm, but with such improvement in courage, knowledge, and political conduct as fitted him to lead the children of Israel to freedom and independence.

But the personal revelation to Moses was only the prelude to such public and general manifestations of divine power, as proved that the Sender of Moses was none other than the Creator and Upholder of all things. Only he who possesses, and can use as he pleases, the matter, the force, and the life of the universe, could have inflicted the plagues on the Egyptian king and nation. That they really occurred as recorded is evident from the deliverance of Israel from Egyptian bondage, and from the profound place this wonderful deliverance occupied in the sacred and national literature of Israel. But these displays of the divine presence and authority were but the beginning of that wonderful and diverse fatherly goodness of God to Israel, which was intended as a pattern and a pledge to the whole world of like fatherly care and love. See their immediate direction by the pillar of cloud and of fire, so that they stirred not but as the Lord led them; their daily food not failing, but neither sown, reaped, ground, nor kneaded by themselves; and, finally, at the time declared, their entrance on and possession of Canaan. These were all palpable facts, which it was impossible surreptitiously to foist. The memorials of them were preserved in the Feast of the Passover, of Tabernacles, and in the rod of Aaron and the pot of manna, which were preserved in the Tabernacle and the Temple, till the destruction of the latter by Nebuchadnezzar.

To the whole community, the infant nation, thus prepared, the Law was proclaimed. But, as might be expected for so important a transaction, special and imposing preliminaries and accessories were appointed. Moses was called to the divine presence, and thence sent back to the people to say: "Ye have seen what I did unto the Egyptians, and how I bare you on eagles' wings and brought you unto Myself. Now, therefore, if ye will obey My voice indeed, and keep My covenant, then ye shall be a peculiar treasure unto Me above all people: for all the earth is Mine; and ye shall be unto Me a kingdom of priests, and a holy nation." To this appeal "all the people answered together, and said, All that the Lord hath spoken we will do." When Moses carried this reply, he was sent back to sanctify them by the appropriate sacrifices and cleansing; their clothes also were washed, and on the third day the whole congregation, in a state of physical

and moral purity, came to the front of Sinai, that they might hear the Lord proclaim His law. "And the Lord came down upon Mount Sinai, on the top of the mount. And Mount Sinai was altogether on a smoke, because the Lord descended upon it in fire: and the smoke thereof ascended as the smoke of a furnace, and the whole mount quaked greatly." From the fire, and the thick darkness, the Lord spake the Ten Commandments, in the hearing of all the people.

The whole scene was imposing and awful, so that "the people removed and stood afar off. And they said unto Moses, Speak thou with us, and we will hear, but let not God speak with us lest we die." Thus it is evident that the whole transaction was, to the assembled Israelites, an awful reality. And, when we consider the circumstances, we see that there was no possibility of simulation. None but the Creator and Possessor of all things could have made Sinai to smoke and quake, and from that fiery furnace have uttered the Law. The moral impossibilities are equally apparent. How could a gigantic deception have been joined on to the Egyptian plagues, the dividing of the Red Sea, and the descent of the manna? Could anything but reality be associated with the utterance of that Law, which is the basis of all sound human legislation, and which to this day has full force in all the most civilised and intelligent nations of the earth? It is impossible also that the morality of a nation could come out of a lie, either spoken or acted, and especially such a full and complete morality as the laws of Israel enjoined. There is also this important collateral evidence of its reality. The descendants of this generation who witnessed the giving of the Law, in all their neglect of it, in all their idolatrous apostasy, never once pleaded the want of authority in the Law itself as an excuse for their sin. And their descendants, so wonderfully preserved as a distinct people to this day, acknowledge the Decalogue as the Law of the Lord. All these assurances, however, are no more than might have been looked for in a declaration of the divine will so important and wide-reaching.

The reality of the scenes of Sinai being assured, let us look at the significance of this revelation. We have here only one view of the Creator,—it is that of King. He does not proclaim anything concerning His own nature, nor satisfy a single human speculation, nor even declare the relations in which He stands to His creatures as the basis of His law; but, taking as an unquestionable and fundamental fact the rightful subjection of all men to Himself, He simply declares His will. And, although the law was given to Israel as the

condition on which alone the special privileges of being a peculiar treasure, a kingdom of priests, and a holy nation could be enjoyed; yet, at the same time, He claimed the right to the whole earth. Thus from the mouth of the Lord Himself we learn our responsibility to Him and our obligation to do His will.

This act of legislation was one, by it the nationality of the Israelites was secured, and only the details of social law and the administration of the law remained to be secured. These did not fail, and in them that full revelation of divine perfection, which the name Jehovah promised, was accomplished. But this economy, which secured such abundant good to Israel, was brought about by the establishment of most perfect and direct responsibility to the Lord, who was not only their God, but their King. And, although by His permission they at length had a human monarch, that monarch was merely the divine vicegerent. They were, therefore, commanded, while yet in the wilderness, that at the time they should say, "I will set a king over me, like as all the nations that are about me; thou shalt in any wise set him king over thee whom the Lord thy God shall choose." This was actually done in the case of Saul and David, and these kings and their successors were simply intrusted with the administration of divine law. Their legislative authority extended only to proclamations of an individual and peculiar character, which adjusted the general provisions of the Mosaic Law to special cases. But not one clause of the original Law could they abrogate or amend. In accordance with this economy, the king was consecrated to his office by an anointing, which was the outward symbol of the gift of the Spirit of God, as the qualification for the efficient fulfilment of the duties of his office, and, when both king and people departed from the law, God Himself inflicted the punishment due to their transgression, as He was their deliverer and helper in all times of their obedience.

In this continued exercise of direct rule over Israel we have repeated proofs of the presence of the Creator and Upholder of all things. When they had grievously departed from the law, and had, contrary to express prohibition, introduced the idolatry of the Sidonians into Samaria, and worshipped Baal instead of the Lord, He withheld rain from them for three years and six months, so that famine was sorely felt in Samaria and the whole country; nor was the infliction removed until the people again declared the Lord to be God, and the 450 prophets of Baal were slain. The means also by which this reformation was effected could only have been used

by Him in whose hands are the forces of the universe. The prophets of Baal in vain called upon their god from morning till noon, and till evening approached, and cried and cut themselves, and leaped in desperation on their sacrifice, but no answer came, and no fire descended. But, when Elijah appealed to the Lord, to show all the people that he had done all in obedience to His word, and thus turn their heart back again to Himself, "then the fire of the Lord fell and consumed the burnt sacrifice, and the wood, and the stones, and the dust, and licked up the water in the trench." Here was a work which only the Supreme Ruler could have done; and, like all which He did in the government of His people, it was done under circumstances which rendered mistake or deception impossible. A public challenge had been given, the prophets of Baal and of the groves, 850 in all, had been summoned, and all Israel had been collected to witness the result of the contest. Most important national interests were involved; an entirely new departure, or a return to the old paths, must be the result of that day's trial; their eyes were open, their interest was excited, their attention fixed, and the result was a national cry, "The Lord he is the God! The Lord he is the God!" If any transaction ever was real, and certain, and unmistakable, this was, up to the unanimous and universal verdict.

Another act of direct divine rule occurred a few years after the above, in the kingdom of Judah, which demands consideration for our present argument. Jehoshaphat was informed that a great multitude of Moabites, Ammonites, and others was coming against him in Jerusalem. He knew that his force was insufficient to meet them, but he believed in the Lord his God, proclaimed a fast, and gathered all Judah to ask help of the Lord. Then, as the voice of the whole congregation, he uttered the following prayer: "O Lord God of our fathers, art not Thou God in heaven? and rulest not Thou over all the kingdoms of the heathen? and in Thine hand is there not power and might, so that none is able to withstand Thee? Art not Thou our God, who didst drive out the inhabitants of this land before Thy people Israel, and gavest it to the seed of Abraham Thy friend for ever? . . . If when evil cometh upon us, as the sword, judgment, or pestilence, or famine, we stand before this house, and in Thy presence (for Thy name is in this house), and cry unto Thee in our affliction, then Thou wilt hear and help. And now behold the children of Ammon and Moab and Mount Seir whom Thou wouldst not let Israel invade when they came out of the land of Egypt, but they turned from them and destroyed them

not ; behold, how they reward us, to come and cast us out of Thy possession, which Thou hast given us to inherit. O our God, wilt not Thou judge them ? for we have no might against this great company that cometh against us ; neither know we what to do ; but our eyes are upon Thee."

When the prayer was ended the Spirit of the Lord came upon a Levite in the midst of the congregation, who, under this divine impulse, said, "Hearken ye, all Judah, and ye inhabitants of Jerusalem, and thou, King Jehoshaphat ; thus saith the Lord unto you, Be not afraid nor dismayed by reason of this great multitude ; for the battle is not yours, but God's. Ye shall not need to fight in this battle ; set yourselves, stand ye still and see the salvation of the Lord with you." On the morrow, when they went forth at the divine bidding to behold the invaders, they found that the Lord had turned their treachery to Judah towards one another, so that Moab and Edom slew the people of Seir and then turned their swords against each other until all were destroyed ; and the number was so great that it took them three days to collect the spoil.

This quotation has been made because this piece of national history establishes every position that has been affirmed in the preceding argument. There evidently was free and conscious intercourse with God. He was addressed by Jehoshaphat as God in heaven, and as ruling in all the kingdoms of the heathen. As their King they appealed to Him for help, and by that power which He, as the Maker and Upholder of all men, was able to use, turned the swords of these foes of Israel against each other, and thus delivered His people who obeyed and trusted in Him, while He, in the same act, punished, by means of their own wickedness, those who had so plainly violated obligations palpable to all.

The two cases selected are only peculiar in this respect, that they were of that public and general importance which precluded the possibility of mistake or deception ; and they have been taken, not as parts of a divine revelation, but as portions of authentic history. And the history of which they are parts is full of similar divine interpositions in the maintenance of His law, both to reward and to punish.

And it must be remembered that, while this rule was immediately over Israel for their good, its ultimate intention was as wide as the race. At the time Abram was chosen as the father of the Church, some special interposition was necessary to prevent the entire and universal departure of men from the Creator and Sustainer of all, as the one true and living God. Other reformers, among the Iranians and

Egyptians, were employed in recalling men to a spiritual worship and a pure and righteous practice; but they were members of nations already in existence, and hence were not able to perpetuate through the whole nation a reformation which they could not extend to all of their own time; therefore it was that the Lord chose Abraham, and of him made a nation, because the Lord "knew him, that he would command his children and his household after him that they should keep the way of the Lord, to do justice and judgment."

In this nation, therefore, trained from the time of its great father in fellowship with God, the Creator determined to perpetuate the remembrance of Himself by His continual operation, to chastise and to bless, until He should complete His revelation in the incarnation of His Son. Thus, through fifteen centuries of idolatry, with its consequent pollution, injustice, oppression, and debasement, He preserved among His own people the knowledge of Himself as the living God, the God of the spirits of all flesh, and the practice of righteousness and truth to men, which, however defective through their unfaithfulness, was far in advance of the rest of the world. There was also established an outward and visible embodiment of divine rule, which has expounded the nature of that rule for all time as no didactic explanation could.

Indeed, everything we know of God we know from facts, and we see how hopeless every other method is in the barren results of philosophical speculation, which, after 2,350 years since the birth of its Grecian branch, has not produced a single proposition concerning the divine nature and government which men generally are able to accept; and, however correct the conclusions arrived at may be, coming only from the cogitations of an individual mind, and that generally abnormal, they entirely lack authority, and therefore are never universally received. The history of philosophy is a history of alternations, and from Thales to the present time the propounding of any philosophic doctrine in one age has been the guarantee of a contradictory doctrine as its chronological successor. At this time no system of philosophy commands universal assent; so that it is evident philosophy can never be the source of practical principles,—can never be the instructress of humanity in the every-day business of life. But the clear and explicit law of our Maker, illustrated by the examples of His continued rule, meets our entire need, and is capable of immediate and intelligent application. Thus it is, that by the records of divine government a child may become an expert in salvation.

This condition of things—for our results are the results of facts—shows that we are brought into immediate contact with our King, and are able to render as true and immediate obedience to Him as to any human monarch; and it is specially worthy of remembrance that, when the Son of God became incarnate and appeared as the Saviour, He commenced His ministry by declaring that the kingdom of heaven was at hand. He was sought by the Persian Magi as He who was born king of the Jews, and His entire work and influence was described by John as the coming of the kingdom of heaven. The title which Pilate in derision put on the cross was true, not only with respect to the Jews, but to all people. Because “He humbled Himself and became obedient unto death, even the death of the cross; therefore, God also hath highly exalted Him, and given Him a name which is above every name; that at the name of Jesus every knee should bow, of things in heaven and things in earth and things under the earth; and that every tongue should confess that Jesus Christ is Lord,”—that is, Ruler or King,—“to the glory of God the Father.” Thus it appears that the establishment of an economy of salvation does not relax the bonds of authority nor contract the range of responsibility, but intensifies both by transferring the dominion to His hands, who, by reason of His death, has spiritual power to recover the disobedient and bring the rebellious into subjection.

We can only conceive of salvation as recovery,—as deliverance from the power and practice of sin. And this, according to the Christian scheme, not only involves the breaking-up of the power of habits of disobedience, but the mastery over all sinful inclinations and dispositions, and the establishment of reverence, filial fear, submission and love to God, as the ruling principles of the soul. But this is a condition in which a sense of responsibility becomes actual and active, to the extent of directing the whole life. But this subjection, when most perfect, is felt to be simply natural. No individual power is suppressed or weakened, no social obligation is forgotten or violated; all find scope, and all operate without friction or pain, because all is felt to be right. And in this testimony of the conscience is a strong, honourable, abiding joy, most sustaining and strengthening to the soul, which now feels that the only means of increased honour and strength, is a more perfect subjection to the divine King, and obedience to the law of the spirit of life written on the heart.

But, if the above be the result of the recovery in those who experience the salvation of the Gospel, then it is evident responsibility to the Author and Sustainer of our nature is a

primary and inseparable quality of the nature itself. And this receives confirmation from the fact that no other impulse is capable of developing the moral, which is the highest side of our nature, into heroic virtue, or of adorning the life with all that is true, honourable, just, pure, lovely, and of good report. One in whom this excellence is found more nearly approaches the ideal of perfect manhood than any other. Consequently, the power by whose operation this state is produced is most peculiarly and intensely human. But that power is a profound sense of responsibility in intense and continued operation.

If we look at the contrast,—that is, at a man who has no sense of responsibility, having suppressed every call to duty and all remembrance of benefits from others, and who now lives as though he were perfectly independent,—we see one without a motive to virtue, and who can only act in mere concert with others from some individual and temporary interest of selfishness. A family, a city, a nation of such isolated units is impossible; and yet the family, the city, the nation, are integral and necessary parts of complete humanity. Union in purpose and work is impossible among individuals who have no sense of responsibility; but without such united purpose and action no cultivation of the mind, no improvement in outward conditions, no perpetuation of the race, and no life,—but in the lowest barbarism and privation,—is possible. Such a state of things is not the intended, as it is not the actual, condition of humanity, but it is the necessary consequence of the existence of beings with our endowments without responsibility. Had such been created, it would have been impossible to awaken a sense of responsibility afterwards; and, had it been possible, who possessed the right to interfere with the Creator's work, and who could possibly have the inclination to impart such a gift to man? Thus, by the necessity of nature, we are driven to the conclusion that man is liable to answer to his Maker for every endowment which has been committed to his trust.

In discussing the question of Human Responsibility, we are bound to give all possible attention to the declarations of the divine will, and to all divine acts which have relation to this side of our nature. And this obligation arises from the fact that none can know the nature so well as its Author, and that He can have no purpose towards it but its improvement to the highest limits. Taking this as our rule of procedure and judgment, we cannot fail to see that, from the beginning, there has been a continual effort to awaken and perpetuate

a sense of dependence for the entire need of our life. And the only conclusion to which we can come, from this continuous divine action, is that a perpetual sense of dependence that will call forth a filial trust, hope, confidence, and love, which will open the entire nature to the fatherly soothing counsel and strength of its Author, is the true normal condition of man. Nothing in divine action leads to the conclusion that we have to do with a rigid destiny, or a harsh despotism, but only with the heart of the Father of our spirits, who yearns over us to reclaim us to Himself, not for His advantage, but for ours. For this reason only He fills the path of apostasy and sin with briars and scorpions, but makes all which lead to His fatherly heart ways of pleasantness and paths of peace.

It is only in this manner that we can consider that most wonderful divine intervention in human affairs,—the Incarnation of the Son of God. That the Maker of all things should condescend to take our nature in its feebleness and suffering into union with Himself, so as to constitute one person, and to remain for ever our brother and the Almighty's fellow, is a manifestation of care for, and interest in us, which is wonderful beyond all thought, and which, but for the abundant proof of its reality, we could not believe. And the wonder is increased by the fact, that the present and perpetual administration of the divine government, which is in His hands, is as truly tender and brotherly as was the original impulse which prompted Him to love us, and give Himself for us.

The individual government of the Saviour over those who receive Him is most perfect, springing out of a union so intimate as to be only properly described as "Christ in you," "Christ dwelling in the heart," the counterpart of which is a most perfect submission to Him in all things, which the Apostle Paul describes thus: "Whether we live, we live unto the Lord; or whether we die, we die unto the Lord: whether we live, therefore, or die, we are the Lord's." And again, after this manner: "Whose I am, and whom I serve"; and "I live, yet not I, but Christ liveth in me." In this complete subjection, however, there is no coercion, the only constraint is the constraint of love. In the love of Christ they are rooted and grounded, so as to be able to apprehend its breadth and length, and depth and height, and so to be filled with it, unto all the fulness of God. This causes such persons to be followers of God as dear children, and to walk in love as Christ loved them, and gave Himself for them. An emotional bond of this strength cannot fail to bring the

whole nature under subjection. But these bonds are willing bonds, being only a response to the love of Christ, which surpasseth knowledge; and the law which we obey, although perfect in its range, extending to all actions, words, dispositions, and thoughts is, after all, the perfect law of liberty; so that, in this condition of perfect subjection, the individual will and purpose are most fully accomplished.

We cannot look upon this peculiarly fatherly rule of God as anything else than the complete accomplishment of His original purpose with respect to man, because it has been brought about by the atoning and mediatorial work of the God-man, who united in His own person the two natures, as the means and the type of the union between God and men above described. Thus, we are taught what the Creator intended for man, and from the extraordinary means used to accomplish it, when imperilled by a general apostasy, we learn the all-but infinite importance attached by Him to its accomplishment.

We cannot fail, however, to see, from the complete series of divine acts in the government of men, that in placing the whole race in a condition of responsibility, and in implanting an indelible sense of it in every human soul, there could not be, as the final purpose, a mere assertion of authority. We must look beyond the authority to the consequences of its exercise in those who submit to it. And here at once we see a benevolence which is equal, in its purity and strength, to the fountain whence it sprang and to the channel by which it has flowed to us. The immediate effect of this submission is the establishment of a condition of conscious peace with God, which is the means and the authority for a continuous friendly intercourse between the Creator and His creature; maintained on the part of the creature by grateful thanks for good already bestowed, a worship of submission, hope, love, and trust, and prayer for present and continued acts of fatherly love and blessing. In these exercises there is neither vagueness nor uncertainty, as there is no doubt concerning the assurance of love, the excitement of courage, hope, and faith, and the infusion of new life into the soul from the Lord. In this intercourse, under a divine illumination, the glories of the divine nature, as shown in the records of His providence and grace, are more distinctly and more fully seen, and thus an impulse to higher devotion and more perfect virtue is given. In this manner, beyond the peace and rest from which it starts, the intercourse with God is the means of increased vigour, righteousness, truth, purity, and goodness.

There is, however, a joy in this fellowship which arises

directly by the operation of the Spirit of the Lord, and which is augmented by the consciousness of all the friendly and gracious relations in which, by the effected reconciliation, we stand to our heavenly Father, which, in the happiness and strength it produces, surpasses all other joy, and is declared to be "unspeakable and full of glory." But it must be always remembered that the first and largest element of this joy is the sense of reconciliation; that is, the consciousness that the condition of rebellion has ceased, and that the subject of the joy has been brought into a state of harmony with and subjection to God. Thus this richest donation of divine grace shows that a condition of actual submission to God is not only perfectly proper and natural to man, but that it is the highest and happiest condition to which he can attain.

This is evidently the true view of the end and purpose of human responsibility, so far as our Maker himself has shown it; and we cannot conceive of any other result but the most perfect development of our nature in all its beauty and strength, as the consequence of full acquiescence in the divine purpose, by unlimited subordination. This side of the question, however, is generally lost sight of, and it is discussed as though the subordination was claimed by an alien authority for its own selfish purposes. This course is all the more strange when we remember the essential peculiarities of our nature in this life, as, that we are capable of boundless knowledge, and equally of unlimited mistakes; that we begin life in total ignorance, and, to perpetuate it, are compelled to consider its immediate need and supply it. So far as the life of the body is concerned, we cannot go far wrong without immediate check; and, in all metaphysical speculation, because of the remoteness and uncertainty of its results, a mistake is not of much moment; but in the cultivation or restraint of the moral side of our nature, which rules our practice, and so affects others also, mistake or perverseness is of most serious consequence to our own character and to the happiness of others.

There is also this peculiarity about all failure in this side of our nature; as it can only take place by the determination of our individual will, so there is special unwillingness to retrace any false step, and thus a course of continuous deterioration and mischief follows from a first step, which only diverged slightly from the path of uprightness. Is it not likely, therefore, that He who has so richly endowed us in every other respect will, with equal care, prompt, restrain, guide, and stimulate us in the cultivation of those dispositions, and in the

pursuit of that course of life which will enable us to obtain the full measure of benefit from His primary gifts ?

That this is the tendency of the divine government of man, is plain from the use to which individual responsibility is put. We are not so much called to answer for the number of prayers we offer, of psalms we sing, or of oblations we present, as to how we act to our parents, children, masters, servants, neighbours, friends, or enemies ; in short, to all men, in so far as our action touches them. All who are brought into the fellowship of Christ walk as He also walked ; that same mind of righteousness, pity, purity, truth, and benevolence which was in Him is also in them, so that they are fruitful in every good work. They are required not only to be blameless and harmless, the sons of God without blemish, in the midst of a crooked and perverse generation, among whom they are seen as lights of the world, but also to remember that "our great God and Saviour, Jesus Christ, gave Himself for us, that He might redeem us from all iniquity, and purify unto Himself a people for His own possession, zealous of good works." In all the Epistles of the New Testament, the fruit of faith is shown to be the fulfilling of every social duty. And there can be no question but that the finest examples of righteous, pure, true, and benevolent living have been the fruit of that thorough submission to the Saviour, which Paul expressed as, "Christ liveth in me." Without such works, faith is declared to be vain and dead.

It is evident that, as the number of such persons increases in any community, the various forms of iniquity which too frequently appear in the intercourse of men to the dishonour and degradation of the perpetrators and to the mischief of others, must diminish, and, when they are universally prevalent, must entirely cease. Then all the misery, and more than half the sorrow of life, would end, while the honour, pleasure, and strength of such a community would constantly increase. In such a state, however, there would be nothing beyond a purely natural life ; that is, a life in harmony with our relations to our Maker and to our fellow-creatures. But there is no moral power capable of producing this state, but such a full submission to God as is comprehended in our accountability to Him.

While we are without limit accountable to God, we see that a subordinate and secondary accountability runs through all our relations to others. Children are liable to answer to their parents, and without this subordination it would be impossible to train them to the duties of life. No compact of any

kind can be made without bringing each of the parties under obligation to fulfil severally his part of the contract. All magistrates are responsible to the head of the state for the administration of the law, and all private persons are required to keep their practice within the prohibitions of the law under which they live. No man is at liberty to touch the property of another or in any way to damage his interests. There cannot be a school, a factory, or an army, but you have subordination, and consequent responsibility, running in an unbroken chain from top to bottom. In fact, no human organisation can exist without it, and this comes from no arbitrary superimposed law, but by necessity of nature. Man must be unmade, and re-made after another pattern, if he could engage in combined action without responsibility; and without such action the race must die out.

Further discussion as to the accountability of man to man is unnecessary, as it is impossible to escape from it, communal life demanding authority and restraint everywhere. We may, therefore, review our conclusions, and so come to a logical result as a guide to practice.

We have seen that we are dependent on others for our life,—first, on our parents; but, as they also are equally dependent on theirs, we are led on to the first Cause and Giver of human life. No man can make himself now, nor could the first man. From our bodily structure, and from the faculties and capabilities of our mind, it is evident that we cannot have come into being by the mechanical or chemical action of matter, nor from both combined, but that our Maker must be a Being of supreme intelligence and power. It also has appeared that we are equally dependent on Him for the continuance of our life; not only as His will prolongs or cuts it short, but as His providence continues the conditions necessary for its preservation; and that we are under His rule absolutely, as to our body and our means of operating by it on the world without us; being unable to depart from the course prescribed for us without injury or destruction. The limits of our ability in this direction are narrow, well defined, and invariable. We are also evidently under a similar invariable rule as to our moral action; so that we can indulge in no vice without deterioration in honour and strength; nor can we trespass on the rights of others, but we bring ourselves under the restraint and chastisement of the laws which the community imposes as a necessary bond of union and protection.

But we have capabilities and wants which the material universe and our fellow-men cannot fully meet or develope. Thus we have seen that, from the beginning of human history, we have evidence that men, by a universal intuition, have aspired after fellowship with their Maker,—not the attainment of mere abstract knowledge, but a true communion of thought, emotion, and action; and that they have so far found what they sought, as to persevere in the practice till now, when religion is more prevalent and more powerful than ever before. The Creator, who has made the eye for light, the atmosphere for breath, and the lungs for breathing; who has given us discernment, and spread the universe before us as an open book for us to read; and who has so made and ordered all our bodily members as to suit the conditions in which He has placed us, cannot have given higher faculties than sensation and intellect, to leave them without a possibility of exercise, by failing to respond to the faculty which He has given for no other purpose but as a means of access to Himself, and the attainment of knowledge concerning His modes of operation in cases which supply no other data from which to start our cogitations.

This prepared us to look for direct and unquestionable fellowship with the Creator, nor were we disappointed. We have records of such fellowship from the beginning of human existence; and, as though on purpose to remove the possibility of doubt or mistake both as to the fact and to the nature of the intercourse, He has connected the most perfect display of His moral glory and of His condescension to man with the government of a nation, in which He maintained His own law by an effectual administration all the way through, showing that He who was king in Israel was the ruler of the world, by employing the substance, forces, and life thereof as His instruments of government. By the same effectual rule He has preserved this people distinct from all others, so that, although for eighteen centuries they have been without a country, and scattered as aliens over the face of the earth, yet they are nowhere absorbed, but retain their identity still; but, wherever they go, they carry with them as their *Magna Charta* the records of that divine government which extended through 1,400 years, although they testify to the disobedience and rebellion of their fathers, and declare that their continued unbelief and sin are the cause of their own present alienation; and as these records were more scrupulously made, are more complete, have been more carefully preserved, and enter more fully into the national life than those of any other people, so they possess the greatest historic value. To deny them would

be to invalidate all history. We have no stronger assurance that Cæsar invaded Britain than that God brought the Israelites out of Egypt and through the Red Sea. We have no better proof of the result of the Battle of Agincourt than we have of the overthrow of the Ammonites, Moabites, and the people of Mount Seir by their own swords.

Thus, by a long series of carefully-recorded events, we find the reality of a divine rule of man is attested, and in our present condition we have abundant proof that it is neither relaxed nor restricted. We cannot remove our body from the operation of the physical laws of the Creator, nor can we take our soul out of the control of His moral law, or prevent a single action of our life from recording its moral verdict in our nature itself. To submit to this rule insures our highest good, because it is that of the Father of our spirits, who can have no purpose adverse to us, and because it enlists the authority, power, and wisdom of the Author and Ruler of the Universe for the accomplishment of our desires and the improvement of our nature. But to resist and rebel is to oppose our highest interest, and can only result in degradation and ruin: "Let the potsherd strive with the potsherds of the earth," but "woe unto him that striveth with his Maker."

THE CHAIRMAN (Mr. W. N. WEST).—Had the author of the paper been present instead of in the southern hemisphere, it would have been a great pleasure to have accorded him in person a vote of thanks for favouring us with so interesting a paper. We are indebted to Mr. Dent for his kindness in reading it, and shall now be happy to hear any remarks that may be offered.*

Rev. J. J. LIAS, M.A. (in responding to a call), said, I feel that I am in the position of an advocate who has no case to argue against. I regard the paper as an extremely able one. What strikes me with respect to the papers read before this Institute as a rule is, that it does not seem desirable

* A correspondent remarks as to page 253, line 4, "Except so far as this, that if He gives existence to other beings it is only to be expected that He should give them means to attain the end He sets before them." The author replies, "I entirely concur as to the existence of such responsibility, yet I am not discussing creation in the place in question, and think it would be irrelevant to introduce the limitation suggested." To the same critic he replies that Max Müller, in *Chips from a German Workshop*, is his authority for stating that Abraham and Zoroaster were contemporary. This critic also refers to the beginning of the sixth paragraph from the end of the paper, and says, "Not without limit, but rather within the limits of our free agency." To which the author replies, "I agree that our accountability is only within the limits of our free agency"; but does not our 'free agency'—or, as I prefer to call it simply, our agency—cover an entire action, responsibility included? I think it does, and therefore wrote 'without limit.'"

. The discussion was not taken on pages 269 to 281.

for us to indulge in anything like microscopic criticism as to an expression used here, or a remark made there, which might either have been improved, or which might have been omitted. We ought, I think, to have regard to the whole drift of the paper, which, I think is, in this case, one likely to advance the cause we all have at heart. (Hear, hear.) It certainly seems to me that the points the author has brought under our notice are well deserving of consideration, and that this is especially the case with regard to one or two of the matters he has discussed. A few days ago I happened to be present at the reading of a paper in the Divinity School at Cambridge, written by Professor MacAlister, a learned man of science, who has devoted himself, among other things, to the study of Egyptian antiquities. The paper he then read was a very remarkable one on the "Ritual of the Dead" (a paper on this subject will be found in vol. vi. p. 321.—ED.) as employed in the early Egyptian religion, and it appears to me that there is one point which the author of the present paper has not brought out with sufficient distinctness, but which the facts actually prove to have been the case, namely, that the further we go back in the history of these ancient nations the more clear it appears to be that the religious principle was originally based on the monotheistic idea. It seems to me that in those early times the primary spiritual ideas connected with religion are more clearly displayed, and that, especially in the case of Egypt, the further we go back the more unmistakably do we find that, just as the Egyptian architecture was more pure and perfect in the earliest periods, so were the religious ideas of the Egyptian people of a purer and more perfect nature. The same remark will apply to the Assyrian religion; but, as to the Persian and Chinese religions, I can hardly speak of them because I have not studied them. I think that the more we study the points set forth in this paper the more does the author, who is so far removed from all intercourse with modern thought and from the opportunities afforded by the libraries and other aids we have around us, appear to demand our sympathy and admiration for having so ably thought out and discussed these matters. There is one point on page 265 which struck me. The author says:—"The force of this important series of facts is not invalidated nor weakened by the consideration that in some of the cases referred to the objects of worship were spurious; but it is rather strengthened by the fact that, so dominant is the sense of need, and so prevalent the persuasion of the possibility of access to God, on whom we depend, that when all true knowledge of Him was lost, and only false substitutes for the living God existed, which could not help, yet, even then, the practice of worship was continued through successive generations of disappointment, all of whom were ready to ascribe the failure to the imperfection of the worship rather than to the impotence or the indifference of their gods." The author here puts in a striking form the argument that human nature cannot do without a power outside of and superior to itself, as Matthew Arnold says, "A not-ourselves that makes for righteousness." We cannot do without something beyond ourselves which will help us to fight

for the right ; we are bound to acknowledge the necessity for an appeal to that Power of whose aid we feel, as poor human creatures, we stand in need. On page 268 the author travels over the same ground to that which I have traversed in a paper read before this Institute, namely, that we are not to look upon God as a mere abstraction of the human intellect, or a creation of our own minds, but as a concrete Being, the source of all life, a Being outside and beyond ourselves, who has created us, and who brought the whole world into existence. There is another point, also, which seems worthy of notice, and that is on page 283, where the author states that the God "who has so made and ordered all our bodily members as to suit the conditions in which He has placed us, cannot have given higher faculties than sensation and intellect, to leave them without a possibility of exercise, by failing to respond to the faculty which He has given for no other purpose but as a means of access to Himself, and the attainment of knowledge concerning His modes of operation in cases which supply no other data from which to start our cogitations." This is a point that has always struck me as being one of very great force. In the physical world we see a marvellous adaptability of means to ends. In whatever department of physical science we pursue our studies we find this remarkable evidence of purpose and design. And yet there are those who tell us that all the higher strivings of our nature which lead us to devotion to God, which bring forth prayer and a sense of dependence, and which lie at the bottom of all religion, are produced in us without an object ; that the mere physical faculties have a distinct and definite purpose, but that those which are highest of all have been brought into existence for no reason whatever. It seems to me that nothing can be more self-condemnatory than a notion such as this,—that all that is worthiest and best in human nature was given to us without a purpose, but that all the lowest, the meanest, and the most commonplace of our faculties have been bestowed upon us for special and definite objects. I agree, however, with a remark I heard made the other day at a meeting at Cambridge by the Right Hon. W. E. Forster, who said he always felt when he got up to speak as if he were in the House of Commons, and that, whether he had an antagonist or not, he was obliged to think he had one. Like Mr. Forster, I also fancy that I can get on best when I have an antagonist ; but in the present instance I cannot term Mr. Blencowe an antagonist, because he is in perfect sympathy with myself, and, this being so, the best thing I can do is to finish what I had to say, and resume my seat. (Applause.)

Mr. W. P. JAMES, F.L.S.—I have much the same feeling with regard to this paper as has been expressed by Mr. Lias, namely, that I agree so entirely with it that it is scarcely possible to say anything that is not in the shape of praise. Perhaps the title may be open to criticism, because it hardly does it justice. It is rather a branch of the theistic argument in general than a mere discourse on "Human Responsibility." It seems to me to take a much wider field than that indicated by the title, and to deal with the proof of theism from the point of view of man's

responsibility to the Creator, at the same time introducing the subject of creation in general. Some of the earlier parts of the paper I consider exceedingly well presented, especially those referring to the various arrangements in nature, from which we must infer a Creator. I may, perhaps, say that among those things from which we generally deduce the argument from design, I myself stumbled on one, which I have not yet seen in print, but which I have several times adduced in arguments I have had with Secularists and Atheists. On one occasion I offered to stake the argument from design upon it, but the challenge was not replied to. The point is this—that when we consider what we see in the world around us, there is scarcely any single thing which furnishes so strong an argument for the existence of a Creator as a fact which, perhaps, has been very little thought of in this connexion, namely, that, as astronomy teaches us, the earth is constantly subject to two distinct motions, the first being that by which it spins round on its own axis with tremendous velocity; and the second, that by which it performs its enormous orbit round the sun, a circuit which is also made at a marvellous rate of speed. Now, when we come to think of it, the world could not be inhabited unless it were so arranged that these tremendous movements should be imperceptible to the creatures upon its surface—and, as a matter of fact, so imperceptible are both these movements that a very long time elapsed before the people living upon the planet became aware of them. This imperceptibility of the movements of the earth I regard as a strong argument in favour of the probability that the world was prepared for habitation before man appeared upon it. The arrangements, whatever they are, by which this result is attained,—such, for instance, as the existence of the atmosphere,—must be the effect of various complex causes, which certainly seem very plainly to indicate that the earth was intended for the habitation of beings for whom it was essential that they should not be conscious of its motions through space, and who must be sheltered against what might otherwise be the effect of those motions during every moment of their lives. On page 257 there is a most able exposure of a very common fallacy as to the word “homogeneous.” A great many people who read the works of Herbert Spencer are much misled by the use of this word, and there can be no doubt that it is used in a very vague way. It is one of those convenient words which, much more than the expression “anthropomorphic,” conceal great confusion of thought. As far as the Greek word “homogeneous” goes, it simply means “of the same kind,” and I fancy this gets so fixed in people’s heads, that when they talk of the original nebula being homogeneous they suppose it was all of one kind. I think, however, when we come to reflect upon it, we shall find there is no reason to suppose that matter at the beginning was all of one kind. If by homogeneous is simply meant a nebula of uniform consistence,—which is probably what Herbert Spencer means,—then, as Mr. Blencowe shows, it is not really homogeneous, for the nebula consists of atoms of the elements of which we at present know sixty-three; therefore, it is not

homogeneous, but, on the contrary, very heterogeneous. I should like to know how an atom of hydrogen could be changed into one of carbon, or sulphur, or iron, or bismuth, or gold, or any other metal; and yet this is what would be meant by evolution in a physical sense. As a matter of fact, no one has ever known an atom of hydrogen become anything but an atom of hydrogen. As regards the note on page 260, the evolution theory is that certain animals placed in the depths of the ocean were once without eyes, as, indeed, is the case now. These creatures do not appear to require them, and manage to get on very well without them; and, this being so, one cannot see why they should not remain satisfied with their condition in this respect. But, according to the evolutionists, we are to assume that these animals became dissatisfied with their want of vision; that certain small fibres along the surface of their bodies became slightly sensitive to light, and thus they were ultimately led to develop visual organs. Why this should be we cannot see, nor are we told of what use it can be to them to become slightly sensitive to the action of light. But, nevertheless, this is the orthodox theory, and we must not call it in question. Well, then, having been thus rendered slightly sensitive to light for a thousand years or so, the sensitiveness increases, and this is the theory as to how eyes are developed! When we have regard to all the long nascent stages which so many generations of these animals must necessarily undergo in the working out of this process, the absurdity of the whole thing is rendered manifest. I think the part of the paper, which deals with the force of conscience, puts the subject in a very clear and able way. It is merely an adaptation of the thoughts expressed by Bishop Butler; but there can be no doubt whatever, without any appeal to authority, that the universality of the faculty of conscience is one of the great arguments for theism and the existence of God. The three main arguments for this proposition are, the metaphysical argument, the argument from nature, and the argument founded on conscience. The metaphysical argument, which, I think, hardly deserves all the hard names that have been applied to it, is, nevertheless, one of the leading proofs of a First Cause; the argument from nature is, likewise, a powerful one; but the argument from conscience is, I suppose, the strongest of all, and I think Mr. Blencowe has put it in an exceedingly able manner.

Mr. R. J. HAMMOND.—At page 257 the author says, "The man who is placed at the head of a grand operative establishment, having a large capital and many subordinates under his control, is bound to greater carefulness, diligence, and fidelity than any one under him." Thus, the pressure is put on the human conscience. Then, the author goes on to say, "By this rule, how truly boundless is our responsibility to the Creator and Upholder of all things." The higher the position the greater the responsibility. The ruler of a state becomes the servant of that state; the head of a government becomes the servant of his fellow-creatures, and cannot sleep as they do, because of the cares imposed upon him. This, it should be remembered, is a responsibility which follows what the rulers have

learned from the Divine Controller of the Universe. The Son of God has been down on earth and has taken the place of a servant, saying, "My Father worketh hitherto, and I work." The divine image of the Father has taken the place of a servant.

Mr. J. HASSELL.—I admire the passage where the writer shows the true effect of the human conscience in the desire and need for God. I hold that the mind of man could never have formed an idea of God, had there not been a God. There must have been the prototype; for it is impossible to form an idea from what does not exist. We ought never to omit the opportunity of putting before the people the argument so well urged by the author of the paper, that God is not the abstract idea of Herbert Spencer—that He is not the metaphysical Absolute, Unconditioned, and Infinite of those who adopt Herbert Spencer's views. According to the metaphysical idea of these men, it is impossible to think of such a being as God. With them God becomes "unthinkable"; without attributes, relations, thought, or action, and therefore, as the author has put it, "without being." I assert that God has relations, as He is our Father, and our King; and we are equally related to Him as His creatures, for whom He framed laws, and for whose wants He makes provision. As opposed to the God of Herbert Spencer, the God of the Bible is a Being of infinite love and compassion; One with whom we can have conscious intercourse, for He is a person—a God, whom we have the power to realise and come into contact and communion with, and is not the metaphysical abstract of the Spencerian philosophy. In opposition to the theory of evolution, I would stand out for the grand principle that God made all His creatures perfect in their order, leading up by various gradations to man, the crowning work of all,—a being formed in His own image, able to worship Him, and capable of personal contact with Him.

Rev. W. C. BARLOW.—In regard to "the terrible charge of being anthropomorphic" (page 267), I have never found anything in that term at all like what is described in Austin Caxton's book. What is there regarded as the terrible resonance of the Greek, has not, in reality, any alarming power. Indeed, the word quoted by the author seems to me a most valuable word, and one that we have no need to apologise for. On the contrary, I think we ought strongly to insist on its being the correct word. We are talking everywhere about God as He is known, or can be, or ought to be known to us; and all human knowledge must come under human forms of thought. There must, therefore, be, as I understand Mr. Blencowe to say, an anthropomorphic character in all our knowledge of God. Besides, a word like this has the merit of suggesting a correlated word. It is one of the words which must come with another word in order to complete the meaning, and on the page referred to the word is treated of in relation to the question of the probability of a revelation from God to man. That revelation begins almost by an affirmation that man is theomorphic, for "God said, Let us make man in our image," the correlative being that God must be known to man in an

anthropomorphic way. That is a point which I think justifies one in saying—henceforth we may glory in the reproach which is conveyed in the censure put upon the word “anthropomorphic.” We need that word to enable us to declare the whole of the idea, which we hold is only true when it is taken as a whole. (Hear.)

The meeting was then adjourned.

REMARKS BY THE REV. R. COLLINS, M.A.

THIS paper arouses the mind very forcibly to the consideration of the question, What must be our ultimate defence against Modern Materialism? I think the true answer is, unquestionably, We must take our stand on History. We have, perhaps, too long expended our powers in chiefly endeavouring to show the weak points in the Materialist's line of thought, we have dealt largely in negatives. It is not very difficult to show that many of the assumptions of the Materialist are too absurd for belief; and yet it is possible to mistake or mis-state them. For instance, the Materialist does not attribute design to the animal or plant that improves itself. The note on page 260 correctly expresses the Evolutionist's theory; but he would not, as on the same page, speak of an animal “discerning the advantage of tentacula,” &c. With the Materialists the will and intelligence are simply “*physical phenomena*” produced by, or associated with, “*molecular processes*,” excited in the brain by external circumstances; the will or “*cogitation*” has no hand in Evolution, only the inherent forces of nature, or whatever other term may be used; so that, as Professor Huxley says, “the whole world, living and not living, is the result of the mutual inter-action, according to definite laws, of the forces possessed by the molecules of which the primitive nebulousity of the universe was composed.” These forces, however, always manage to work for *harmony*; and the Evolutionists are *obliged* to use, or choose to use, the language of intelligence. Darwin's phrase “*natural selection*” is a case in point. This always seems to me a tacit, though no doubt unwilling, testimony to the fact, that “*final causes*” are being worked up to; and it is difficult to conceive that, without supposing previous intention somewhere. And yet intention is no part of the Evolutionist's theory.

How are we then, in our turn, to explain the potency or potencies, or whatever term may be acceptable, under which the *Cosmos* is what it is? Mr. Herbert Spencer unifies this effort in Nature, and expresses it as “an Infinite and Eternal Energy from which all things proceed.” Our mission is to show that the Infinite and Eternal Energy is the Energy of an Infinite and Eternal Intelligence; and to persuade men of this we must fortify our statement that this Intelligence *has spoken to man*.

Natural Religion and mere reason have not weapons strong enough for the entire defeat of Materialism. We need Revelation.—In short, we must gather our forces more and more within the domain of History. The “inward testimony” of man—a point emphatically brought out in Mr. Blencowe’s paper—existing as far back as we can trace his history, to the existence of a Creator and Upholder of all things, is, in fact, the result of that Creator’s revelation of Himself. The ancient literature of the nations, and the records that are being disintombed from the long-forgotten mounds of Eastern cities, are to furnish, especially in their confirmation of the Jewish and Christian Scriptures, the best weapons against Modern Scepticism. To the man, who is convinced that God *has spoken*, materialism becomes necessarily an empty and useless dream. And, as regards the prominent topic of this paper, to the man, who is convinced of an Infinite and Eternal Intelligence, the Author of all being, the doctrine of human responsibility becomes an intense reality, the pole-star of human moral life: while to the Materialist it is but one result of what have been called “social forces,” and must be as changeable and evanescent as “social forces” themselves have ever been.

ORDINARY MEETING, JANUARY 19, 1885.

A. McARTHUR, ESQ., M.P., V.P., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

MEMBERS :—W. A. McArthur, Esq., London ; J. F. Usher, Esq., M.D., Australia.

ASSOCIATES :—F. Gardiner, Esq., United States ; Rev. J. P. Ellwood, India.

Also the presentation to the Library of the following works :—

“Metropolitan Water Supply.” By J. Thornhill Harrison, Esq.

From the same.

“From Source to Sea.” By W. P. James, Esq., F.L.S.

Ditto.

A Lecture on the “Historical Evidence of the Abramic Migration” was then delivered by Mr. W. St. C. Boscawen. A brief discussion ensued in which Mr. Hormuzd Rassam, Mr. Trelawney Saunders, Mr. Tyler, a visitor, Mr. W. Griffith, and Mr. Boscawen took part ; the meeting was then adjourned.

[Mr. Boscawen's investigations, when complete, will be laid before the Institute in the form of a paper.]

ORDINARY MEETING, MAY 18, 1885.

SURGEON-GENERAL C. A. GORDON, M.D., C.B., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

LIFE MEMBERS :—G. Burns, Esq., J.P., Scotland ; the Honourable Donald A. Smith, Canada.

ASSOCIATES :—Captain G. Morton, U.S. Navy, United States ; Rev. T. H. Penrith, Manchester ; Rev. J. F. Riggs, M.A., United States.

Also the presentation to the Library of the following works :—

"Proceedings of the Royal Society."	<i>From the same.</i>
"Proceedings of the Royal Geographical Society."	"
"Proceedings of the Royal Institution."	"
"Proceedings of the Royal United Service Institution."	"
"Proceedings of the Geological Society."	"
"Proceedings of the Anthropological Society of Washington."	"
"Proceedings of the United States Geological Survey."	"
"The Errors of Evolution." By R. Pattison.	"

The following paper was then read by Mr. H. CADMAN JONES, the author being unavoidably absent :—

THE WORSHIP AND TRADITIONS OF THE ABORIGINES OF AMERICA; or, their Testimony to the Religion of the Bible.—By the Rev. M. EELLS, Missionary of the American Missionary Association among the Indians, Skokomish, Mason County, Washington Territory, U.S.A.

"TO undertake to trace ethnic relations between widely-separated peoples, by similarity of manners and customs, is an uncertain guide. Man, apart from his improvable reason, has, what we call in the higher animals, instinct ; and, as the beaver everywhere constructs his dam according to a definite plan, so will man perform certain acts instinctively, after a certain manner. Hence among barbarous nations we may expect to find a similarity of manners and customs, without necessarily supposing that they are the result of inheritance ; but, when we come to the higher manifestations of art, the result of improvable reason, there are found certain characters, original and unique, which become infallible guides in tracing national affinities."*

* Foster's *Pre-historic Races of America*, p. 310.

In the writer's opinion the highest manifestations of art are found in the department of religion. Some have brought forth, as arguments to prove the unity of the race, the similarity of their architecture, pottery and stone implements, their language and various habits, but religious belief and ceremonies are more deeply seated in the human mind than any other customs.

Those who have attempted to civilise the heathen have found them much more willing to adopt the manners and customs of civilised nations which have reference to food, clothing, architecture, ornament, implements of common use and war, and even social, governmental, and educational customs, than those which have reference to their religion. It is but natural, hence, to suppose that among the savages their religious ideas have changed less than the others, and that, if there are any customs which become "infallible guides in tracing national affinities," these are the ones.

When America was discovered it was peopled by an unknown race. When and how they came hither, and whence they came, are questions which are not satisfactorily answered. There are not a few persons, who have become distinguished as scholars, who have maintained that they never came to America, but that they were created or developed (according to the theory which they hold) on this continent, and that the words of the Bible are not true, when it says that "God hath made of one blood all nations to dwell on the face of the earth."

It is the object of the present paper to examine the religions of these natives; to compare them with those of the rest of the world, especially with that of the Bible; and to see if there is not here an argument in favour of the unity of the race, as well as to sustain various parts of the Bible.

True, if a stranger were to go among the Indians, and for the first time hear the noise and see the incantations of their religious ceremonies, he would be likely to say that there is nothing like it in all the world, and that Solomon was slightly mistaken when he said that there is nothing new under the sun; that rather, if he had come to America, he would have changed his mind. To the writer, at least, it appeared so at first.

But a more careful view of the subject has entirely changed his opinions, and has led him to believe that Solomon was right. It is probable that he even saw more of savage incantations than a large share of the human race.

Not only does this seem to be true, but the principles of their religion, when stripped of their outside ceremonies, their

outside envelope, seem to agree so well with those of the other parts of the world as to give a strong argument, though they may not absolutely prove it, that, if they had no direct revelation from Heaven since they came here (and no one claims this, I believe), they must have descended from those who had direct intercourse with Heaven.

Religion may naturally be divided into four parts: the Beings in the Spirit World more powerful than Man; Man as a Spiritual Being; the relations between Man and these Beings of the other world; and Man's future State.

I.—THE BEINGS OF THE SPIRIT WORLD.

(a) *The Supreme Being.*—The Indians are generally supposed to have a belief in some such Being, not exactly the God of the white man, but some Great Being, superior to man and all other spirits. In a general way, almost any history of America makes this statement, though without perhaps speaking of the different shades of belief among the different tribes, or any apparent or real exceptions to it. Lossing, Wilson, Quackenbos, and others do so.

But, beginning with the southern extremity of the continent, the Patagonians pray to a Great Spirit, who is worthy of all veneration, and does not live in the world. The inhabitants of Tierra del Fuego have similar ideas, and the same is true of the Brazilian tribes and those about the Orinoco River.*

Says Rev. W. H. Brett, for many years a missionary among the tribes of Guiana: "There is a confused idea dwelling in their minds respecting the existence of one Good Spirit. They regard him as their Creator, and their ideas of his nature are in many points surprisingly correct. As far as we could learn, they regard him as immortal, omnipotent, invisible, and omniscient; but, notwithstanding this, we have never discovered any traces of religious worship paid to him. They seem to consider him as a Being too high to notice them, and, not knowing him as a God who hears prayer, they concern themselves but little about him. Ages have elapsed since their ancestors gradually forsook God, yet still tradition has handed down a belief in the existence of a Supreme Being, which the observation of nature has confirmed, for lightning and thunder convinced them of his power, and the growth of their cassava and other food of his goodness."†

* Bradford's *American Antiquities*.

† Brett's *Indian Tribes of Guiana*, pp. 67, 283.

Previously to the race who inhabited Peru when it was discovered, another race dwelt there. Their creed was greatly disfigured with superstitions, yet it still had a conception of a Supreme Being whose name was Con, who was an invisible and omnipotent spirit, which inhabited the universe. He had a son whose name was Pachacamac, who did much to renovate the world. One of the Incas, however, afterwards introduced the worship of the Sun, and declared him to be the Supreme Divinity, and taught the people that Con and Pachacamac were his children. Most of the people accepted this in the course of time, but not all.*

The Carios of Columbia had no temples, but worshipped the stars, and believed in one God.†

In Yucatan, Nicaragua, and Michcoacan the people believed in a Supreme Being, the First Cause and invisible. The Chihuahuans worshipped a Great God called Captain of the Heaven, while a lesser divinity inspired the priests. In Durango they called the principal power the "Maker of all things," and the Mexicans adored him under the name of Tloque Nahuaque, "The Cause of all things," the same Being as the "Heart of Heaven" of Guatemala.‡

The Aztecs also had a Supreme Ruler and Lord of the universe.

The Zuñis, according to Mr. F. C. Cushing, believe there is one Supreme Ruler over all the gods, whose name is Hano-onawilona, or holder of the roads of light, and he is represented by the Sun itself. He is believed to be able not only to see the visible actions of men, but also their thoughts.§

The Moquis believe in a Great Father, who lives where the sun rises, the father of evil, war, pestilence, and famine, and a mother, whose home is where the sun sets, from whom we have joy, peace, plenty, and health. The Mojaves believe in a material Creator of heaven and earth, who has a son, Mastanho, who made the water and planted trees; the Apaches have a Supreme Power in heaven, the Creator and Master; and the natives of Nevada a great, good, kind Spirit.||

The Karoks of California have a conception of a Supreme Being, whom they call Kareya, the old man above, who sometimes descends to the earth as a venerable man to teach the medicine men, though, like most California tribes, the Coyote

* Tschudi's *Peruvian Antiquities*, chap. vii.

† *American Antiquarian*, July, 1882, p. 177.

‡ Bancroft's *Native Races of the Pacific States*, vol. iii. chap. vi.

§ *Popular Science Monthly*, June, 1882.

|| Bancroft's *Native Races of the Pacific States*, vol. iii.

is their most practical Deity. The Supreme Being of the Yuroks is called Gard, who created all things and gave them their language. The name of the Supreme Being of the Wintuns signifies the Great Spirit of the West, and the Maidus and Palligawonaps describe him as the old man, the Creator. But most of the California tribes evidently had but little idea of a Supreme Being, except so far as he dwelt in the Coyote. He it was who created man, animals, everything, and, according to some, even the world,—not exactly the Coyote, but the great active principle residing in the Coyote.*

The Clatsops, Cathlamets, Chénooks, and Wahkiakums around the mouth of the Columbia River believe in an omnipotent, benevolent Spirit, the Creator of all things. Usually he inhabits the sun, but occasionally wings his way through the ethereal regions, and sees all that is doing on the earth, and thunders, lightnings, and tempests are ways in which he exhibits his displeasure.†

The Twanas or Skokomish Indians of Puget Sound believe in a Great Being, not the Saghalie Tyee, or Wis Sowulus or Chief above, of whom they have learned of the whites, but one whose name is Dó-ki-batl, the Changer, because long ago he changed many of the ancient race of beings into deer, beaver, birds, stones, and the like. The Clallams had a similar belief, though they thought that the sun was God, and their children were told to be afraid to do wrong because the sun would see them and be angry.

The Makahs,‡ Nez Percés, and Flatheads likewise believe in a Great Spirit, the Blackfeet that they were created by him, and the Rocky Mountain Indians invoke his aid.§

The Haidahs believe the Great Solar Spirit to be the Creator and Supreme Ruler, but some worship nothing. The Nootkas have a tradition of a Great Supernatural Teacher and Benefactor, who came to them from Puget Sound long ago; the Ahts believe the sun and moon, as man and wife, to be Supreme; the Okanagans have a good Spirit, called Skypappe, to whom they sometimes pray; the Thlinkets have no Deity, but believe the raven to be the Creator; and the Aleuts recognised a Creator God, who made the world, but do not worship him.||

* S. Powers in *Contributions to N. A. Ethnology*, vol. iii. pp. 24, 35, 64, 161, 182, 214, 241, 287, 394.

† Dunn, *On Oregon Territory*, p. 90.

‡ Swan's *Makah Indians of Cape Flattery*, p. 61.

§ Dunn, *On Oregon Territory*, pp. 212, 213, 219.

|| Bancroft's *Native Races of the Pacific States*, vol. iii. p. 141, &c.

The Newetsee Indians about Millbank Sound, in British Columbia, believe in a Great Spirit who is good, and made us and the world ; and the Bella Bellas thought they could make a steamship, when they first saw one, with the help of the Great Spirit.*

Missionaries among the Dakotas or Sioux have been unable to satisfy themselves that those Indians had any idea of the Great Spirit before the coming of the whites, but that He was a dream of the poets and sentimentalists ; yet, besides their numerous gods, the great object of their veneration was their Takoo Wakan, the Great Mysterious, which comprehended all mystery, secret power, and divinity, who dwells everywhere, rather a pantheistic God, yet so much of a being that the Indian exclaims in prayer, " Mystery, Father, have mercy on me."†

Dr. W. Mathews agrees with them, and yet says one designated as the Old Man Immortal has no vague existence in their minds, for he made all things and instructed their forefathers in their ceremonies.‡

From this I understand that these Indians did not believe in the Great Spirit of the Indians as described by some writers, and yet that *they had a conception of a Supreme Being greater than all their other gods.*

Among the Omahas, the Wakonda is believed to be the greatest and best of beings, who has various attributes of the Supreme Being, and punishes men for their evil deeds.§

Captain Carver relates an interesting incident of the worship of the Great Spirit at the Falls of St. Anthony, by a young Winnebago Chief.||

The Algonquins, both of Canada and the United States, give him the name of the Great Hare, Michabou ; the Agreskoui of the Hurons, and the Agreskouse of the Iroquois, is the Sovereign Being of these tribes, and the New England tribes conceived of one Almighty Being who dwells in the south-west regions, who was superior to all other divinities.¶

McCoy speaks of the same ideas among the Indians of Indiana and the Indian Territory, especially the Pottawottamies ;** Bradford certifies to them among the Eskimo, Osages, Arikarees, Pawnees, Indians of Virginia, Algonquins, and

* Dunn, *On Oregon Territory*, pp. 173, 184.

† *Gospel Among the Dakotas*, chap. v.

‡ *Hidatsa Indians*, p. 47.

§ *Long's Expedition*, 1819-20, vol. i. p. 267.

|| *Century of Dishonour*, pp. 239, 240.

¶ *Hayward's Book of All Religions*, pp. 210-212.

** *History of Indian Missions*, p. 457.

Caribs of the West Indies;* and Heckwelder gives the same testimony about the Delawares, Munsees, Tuscaroras, and other tribes of Iroquois lineage, and the Indians of Pennsylvania and New York.†

Thus much on one side. A little may be said on the other.

Says Bancroft, "It is not till we reach the golden mean in central California that we find whole tribes subsisting on roots, herbs, and insects, having no boats, no clothing, no laws, no God, the lowest of their neighbours save only perhaps the Shoshones or Snake Indians on their east. In the vocabulary of the tribes at San Francisco Bay Father Junipero Serra in 1776, when he established the mission of Dolores, found no word for God, angel, or devil."‡ The Thlinkets, too, Bancroft says, are said not to believe in any Supreme Being.§ Powers speaks of the same among the Patwins of California, but says it must be taken *cum grano salis*.|| F. M. Galt received the same statement from the missionaries among the Peruvian Indians, who could find no ideas among them of a Supreme Being, or the soul's immortality, except that they seemed to have a vague idea of an Evil Spirit.¶ J. Baegert, a German Jesuit missionary among the tribes of the California peninsula during seventeen years of the second half of the last century, dwells at length on the same statement among the Indians there;** and Rev. J. M. Jemison, missionary among the Shoshones in Idaho, in a letter to the writer, says the same is true of those Indians. The Eskimo, and Tinnehs are stated also to have no belief in a Supreme Being, though they have in lesser divinities.††

It may all be true. The writer is not prepared to deny it, yet it may be found that something takes the place of this Supreme Being in the belief of most of these Indians, for, as already stated, the Thlinkets believe the raven to be the Creator.‡‡ Col. Bracket says of the Shoshones that they have not much idea of a God, though they believe in Tamapah or Sun-Father, who is the Father of the Day, the Father of us all, and who lives in the Sun;§§ and the California Deity

* *American Antiquities*.

† *Contributions to N. A. Ethnology*, vol. iv. p. 49.

‡ Bancroft's *Native Races of the Pacific*, vol. i. p. 400.

§ *Ibid.*, vol. iii. p. 145.

|| *Contributions to N. A. Ethnology*, vol. iii. p. 224.

¶ *Smithsonian Report*, 1877, p. 311.

** *Ibid.*, 1864, p. 390.

†† Bancroft's *Native Races of the Pacific*, vol. iii. p. 141.

‡‡ P. 297 of this paper.

§§ *Smithsonian Report*, 1879, p. 330.

dwelt in the Coyote.* This will be more fully discussed in the conclusion.

(b) *Good Spirits*.—These in the east are called Manitous; in the north-west, Tamanous. The belief in them is fully as wide-spread as in a Great Spirit, and to the Indian much more practical. The Supreme Being, it is true, made all things long ago, but the good spirit of each individual or household takes care of him now, hears his prayers, and is his guardian angel.

Says Schoolcraft, who is good authority in regard to Indians, "The belief in Manitous is universal, all tribes have such a word."

From the southern extremity of the continent, the Patagonians and inhabitants of Tierra del Fuego, to the northward among the Brazilian tribes, the Indians on the northern part of South America, the Caribs of the West Indies, the Algonquins and Indians of Virginia and California, and the Eskimo all believe in a multiplicity of spirits, both good and evil.†

In Peru, they had innumerable deities, less than the Supreme Being, historical deities, those of the nation, those of different towns called Huacas, and household gods similar to the Lares and Penates of the Romans, of various material, gold, silver, copper, wood, stone, clay, &c., and of various forms, both human and inhuman.‡

In the Latimer collection of antiquities from Porto Rico are a number of stone images and amulets. The inhabitants of Hispaniola had small images of their gods, which they bound about their foreheads when they went to battle, and each cacique had a temple where an image of his tutelary deity of wood, stone, clay, or cotton was kept.§

Bancroft || devotes one hundred and ninety octavo pages to a description of the Mexican deities and their worship, and says that the Chihuahuans recognised many lesser deities dwelling in and inspiring their priests.

According to Mr. F. C. Cushing, the Zuñi Indians have beneath their supreme deity a long line of lesser deities, very numerous, divided into six classes—the hero-gods, gods of the forces of nature, sacred animal gods, gods of prey, gods of the divinities of places, and demon-gods.¶

* P. 297 of this paper.

† Bradford's *American Antiquities*.

‡ Tschudi's *Peruvian Antiquities*, chap. vii.

§ *Smithsonian Report*, 1876, p. 378.

|| *Native Races of the Pacific*, vol. iii.

¶ *Popular Science Monthly*, June, 1882.

According to the personal knowledge of the writer, the Clallam, Twana, Chemakum, Skokomish, Skagit, Chehalis, Puyallup, Makah, Nisqually, Spokane, and Cayuse Indians make this the practical part of their religion. When a boy has grown to be a young man, he goes off to the woods by himself, and remains there from ten to fourteen days without eating, but often bathing himself, when his guardian spirit reveals itself to him in some animal; not that the animal is a spirit, but his guardian spirit dwells in the animal.

Mr. Swan gives a similar description of this practice among the Makahs.* The Nass Indians around Fort Simpson, British Columbia, carry the images of their gods in a box, which is sacred and hardly ever seen by the common people.† The Innuits of Alaska have a similar belief,‡ and the Eskimos, while they are said to have no belief in a Supreme Deity, yet have an indefinite number of supernatural beings of various names, as do also the Tinnehs.§

The Dakotas have their Armour God as the deity of each young man, the Spirit of the Medicine Sack for those who belong to the secret order of the Medicine Dance, and household gods in the form of small images.||

In Canada, the Indians hold to an infinite number of Spirits, both good and evil;¶ the Knistenaux, around Hudson's Bay, have private feasts, when various articles are brought out in the medicine-bag, the principal of which is a household god, a curiously-carved image about eight inches long; ** and Rev. S. D. Peet, the editor of the *American Antiquarian*, is well satisfied, from the idols discovered, that the Mound Builders had their tutelar divinities.††

Thus we see that this belief is widespread, if not universal.

(c) *Evil Spirits*.—The belief in an Evil Spirit of great power, and also in a large number of imps of less power, is also very common.

The natives of Patagonia and Tierra del Fuego believe in a multiplicity of evil spirits as well as good ones; ‡‡ those of Guiana thought the Great Spirit too high to notice them, and hence had the most abject fear of the evil principle, and sought to propitiate the devil, and evil spirits called the

* *Makah Indians*, p. 61.

† Dunn, *On Oregon Territory*, p. 188.

‡ Dall's *Alaska*, p. 145.

§ Bancroft's *Native Races of the Pacific*.

¶ *Gospel Among the Dakotas*, pp. 69, 70.

¶¶ Hayward's *Book of All Religions*.

** Dunn, *On Oregon Territory*, p. 72.

†† *American Antiquarian*, vol. iii. p. 101.

‡‡ Bradford's *American Antiquities*.

Yau-ya-hau;* and the Peruvians believed in the existence of a powerful Being, opposed to the Supreme Being, full of hatred to the human race, reminding one of the Ahriman of the Persians, or the Satan of the Jews.†

Bancroft, in describing a burial on the Mosquito coast in Central America, says that, as it is supposed that the Evil Spirit seeks to take possession of the body, means are taken to prevent it.‡

Among the Navajos, when a dead body is removed from a house, it is burned down, and the place always abandoned, as the belief is that the devil comes to the place and remains where it is.§

The name of the Evil Spirit of the Mojaves is Newathie,|| and the Pimas of California believe in a Great Evil Spirit and a multitude of witches who cause sickness.¶

The Tatu of California are terribly afraid of snakes, because they believe them to contain the spirits of wicked people, sent back to this world by the devil; the Ashochimi worship the owl and the hawk, because they believe them to be the dwelling-place of powerful and wicked spirits whom they must appease; the Patawat believe in innumerable sprites in the shape of men and women, who do various terrible things; they do not appear to be dead Indians returned to life, but pre-existing demons taking the human form; the Tatus and others have secret societies, whose object is to keep the women in subjection by "raising the devil"; and the Maidus hold a great spirit dance to propitiate the evil demons.**

The Klamath and Trinity Indians of Northern California keep a fire and howl around the grave of a deceased person to prevent him from being captured by the devil on his way to the spirit-land.††

The Shoshones believe in the existence of imps or demons, the natives of Nevada in that of an Evil Spirit; the name of that of the Okinagans is Chacha, and, of the Konigas, Eyak.‡‡

The Indians around the mouth of the Columbia River had a belief in an Evil Spirit which inhabits the fire, and which,

* Brett's *Indian Tribes of Guiana*, p. 336.

† Tschudi's *Peruvian Antiquities*, p. 152.

‡ *Native Races of the Pacific*, vol. i. p. 744.

§ Yarrow's *Introduction to the Study of Mortuary Customs*, p. 13.

|| *Ibid.*, p. 14. ¶ *Native Races of the Pacific*, vol. iii.

** *Contributions to N. A. Ethnology*, vol. iii. pp. 98, 142, 144, 199, 286.

†† Yarrow's *Introduction*, p. 10.

‡‡ Bancroft's *Native Races of the Pacific*, vol. iii.

although less powerful than the Great Spirit, is occasionally employed to do his services. The Evil Spirit of the Newetsee Indians has hoofs and horns, while the Nez Percés and Flat-heads also believe in a similar being.*

In Washington Territory the belief in these spirits is just as plain as that we see a medicine man perform his incantations, for the reason of it is that they believe an Evil Spirit in the form of some treacherous animal has been sent into the heart of the sick person, and it is the business of the good Indian doctor to remove it. So, too, they generally tear down or leave the houses in which a person has died, for the Evil Spirit which killed the deceased is still supposed to remain there, ready to attack others, especially children.

The sum and substance of the Dakota religion is demon worship. These demons are ever ready to pounce on the unwary; spirits of darkness, spirits of light, spirits of earth, air, fire, and water surround the Indian on every side, with but one object in view, the misery and destruction of the human race.†

According to the Iroquois, there was a Good and a Bad Mind who fought with each other for two days, when the Good Mind conquered, and drove the Evil Mind to the world of despair and darkness.‡

In New England, the people stood in greater fear of the devil than they did of the Supreme Being, and worshipped him from a principle of fear.§

In the preceding section on Good Spirits, reference is also made to a belief in Evil Spirits among the Brazilian tribes, the Indians of the northern part of South America, West Virginia, and Canada, the Caribs, Algonquins, and Eskimo.

Yet, on the other hand, Long, in 1819-20, says of the Omahas that they have no idea of a devil.|| Whether more recent investigations have confirmed or contradicted this, I do not know.

Dr. Brinton has, indeed, said that an American Indian has no idea of a devil. If by this he means such a one as Milton describes, it is so; but they certainly do have one or many, only as much less than ours as an Indian's imagination is less than that of Milton.¶

* Dunn, *On Oregon Territory*, pp. 90, 173, 213.

† *Gospel Among the Dakotas*, pp. 93, 94.

‡ Schoolcraft's *Notes on the Iroquois*.

§ Hayward's *Book of All Religions*, p. 212.

|| *Long's Expedition*, vol. i.

¶ *Contributions to N. A. Ethnology*, vol. iii. p. 414.

II.—MAN AS A SPIRITUAL BEING.

(a) *His Immortality*.—When we look at a graveyard on Puget Sound, and see there canoes, muskets, cloth, clothes, dishes, looking-glasses, bows and arrows, and almost everything that is valuable to an Indian in this life, silently yet eloquently they say one thing, that those who placed us here believed in the immortality of the soul; that, as these articles decay, they will be carried by spirits away to the deceased in the next world, there to be put together again and used. And what is thus said here is also said all over America, from the frozen regions of the north to Tierra del Fuego on the south, and from the Atlantic to the Pacific, with, it is barely possible, a few exceptions, and it is not certain about these.

Faith in the immortality of the soul was one of the fundamental ideas among the Peruvians. Food and valuables were placed in or near the graves, and the servants and wives of great men were there often killed, or killed themselves in order to attend him in the next world.*

The Mexicans did much the same, two hundred persons having sometimes been killed, and three or four thousand dollars in gold buried with royal persons.

Want of time and space forbids my doing much more than refer to the writers who speak of this and the names of the tribes.

Dr. Yarrow† speaks of articles being buried with the Omahas, Sierra Nevadas, Utahs, Achomawi, and Karoks of California, Tolkotins [Tualatins] of Oregon, Indians about the Cascades, the Yakamas, Makahs, and Skagits of Washington Territory, Sioux, Blackfeet, Navajos, Panama Indians, and Indians of Leech Lake, Minnesota. In a further article in the *Annual Report of the Bureau of Ethnology*, 1879–80, the same writer likewise refers to the Mohawks, Sacs, and Foxes, Creeks, Seminoles, Otoes, Pueblos, Wichitas, Doraches of Central America, Round Valley Indians, and Keltas of California, Congarees of South Carolina, Innuits and Ingaliks of Alaska, Apaches, Gros Ventres, Mandans, Chinooks, Chippewas, Nebraska and Virginia Indians; while he directly states a belief in the immortality of the soul among the Comanches, Caddoes, Sionx, Panamas and Natas, Wascopums, and Yuroks.

Bancroft speaks of the same among the Ahts and Nevadas.‡

* Tschudi's *Peruvian Antiquities*, pp. 151, 126, 200–202.

† *Introduction to the Study of Mortuary Customs*.

‡ *Native Races of the Pacific*.

Jones, in his *Antiquities of Tennessee* (chapter ii.), speaks of the same facts among the Iroquois, Creeks, Santee Sioux, Mandans, Omahas, Hurons, Choctaws, and Natchez; sometimes the human victims at such places strangling themselves with joy.

Similar facts have been found to be true of the Indians of Southern Oregon* and Southern California.† The Aleuts have the same belief,‡ and also the Indians of Southern Alaska,§ and the Miamis.||

According to the personal knowledge of the writer, twelve tribes, in Washington Territory, Oregon, and Idaho, believe the same.

We know very little of the Mound Builders, and yet much of what we do know is preserved to us, because that they believed the same, and hence buried so many articles in their tombs, which have been unearthed during the present age.

In fact, there are very few, if any, exceptions to it. Schoolcraft says he never heard of any. When Dr. Jemison, a missionary among the Shoshones of Southern Idaho, asked an Indian what became of him when he died, he received the reply, "That is all of him." This is a tribe which is said not to believe in a Supreme Being. The Miwoks, Yokuts, and Monos of California seem likewise to have no belief in the future existence of the soul, but believe in its utter annihilation. They mourn for their dead as without hope; their effects are all burned, so that there may be nothing to remind the living of them; and their names are never mentioned.¶ Jacob Baegert says that, after diligent inquiries, he could never find the slightest ideas of a future life among the Indians of the California Peninsula,** and F. M. Galt says the same of some Peruvian Indians.†† Most of these tribes have been referred to in the first section as having no belief in a Supreme Being.

On the other hand, all that will be said on the subject of future rewards and punishments bears on a belief in immortality.

(b) *Sinfulness*.—I will not dwell long on the subject of man's sinfulness, as nearly all that will be said about sacrifices

* *Smithsonian Report*, 1874, pp. 341, 345, 350.

† Haden's *Bulletin U.S. Survey*, vol. iii. No. 1, pp. 34, 38.

‡ Dall's *Remains of Later Pre-historic Man in Alaska*.

§ *American Antiquarian*, vol. iv. p. 137.

|| *Ibid.*, vol. ii. p. 24.

¶ *Contributions to N. A. Ethnology*, vol. iii. pp. 349, 383.

** *Smithsonian Report*, 1864, p. 390.

†† *Ibid.*, 1877, p. 311.

among the various tribes there mentioned proves a belief in this doctrine, because those sacrifices were offered to atone for sin.

According to the Sioux, bad spirits are sometimes sent back to the earth in the shape of animals, to undergo penance for their sins;* and the Sacs and Foxes, by parting with articles at the graves, believe that they will propitiate the Great Spirit for sins committed during the life of the deceased.†

III.—THE RELATIONS BETWEEN MAN AND THE SUPERIOR BEINGS OF THE OTHER WORLD.

(a) *What these spirits have done and are doing for man.*

(1) *Creation.*—Says Schoolcraft, the Indians seem to have but few ideas of the past; one is creation, then nothing more until they speak of the Deluge, and then nothing until about the present time. Their traditions about creation, like those about the Supreme Being, are such that the central idea is plain, and yet they are so mixed with curious surroundings as to show that they did not get the idea from the whites.

The shortness of space forbids my giving many of these traditions; reference can only be made to some which are specially interesting.

According to the first race who inhabited Peru, their deity, Con, by his word alone, created the world, elevated the mountains, excavated the valleys, filled the rivers, lakes, and seas with water, gave life to man and provided him with the things necessary to his happiness.‡

The Quiches, of Guatemala, say that there was a time when nothing existed; nothing—nothing but silence and darkness, except the Creator, Former, Dominator, Feathered Serpent, and the heavens, below which all was empty, unchanging solitude. Then appeared a vast expanse of water, on which divine beings moved in brightness. They said, "Earth!" and instantly the earth was created. It came into being like a vapour, mountains rose above the waters like lobsters, and were made. Next, animals were created, and after them four men, after three unsuccessful attempts; and then four women, while the men were asleep.§

Bancroft, in vol. iii. of his *Native Races of the Pacific*, devotes

* *American Antiquarian*, vol. iv. p. 138.

† *Annual Report, Bureau of Ethnology*, 1879-80, p. 97.

‡ Tschudi's *Peruvian Antiquities*, p. 147, &c.

§ Baldwin's *Ancient America*, p. 194.

about eighty pages to the traditions of creation as given by the Quiches, Mexicans, Tezcucans, Moquis, Navajos, Pueblos, Thlinkets, California Indians, Aztecs, Miztecs, natives of Guatemala, Sinaloa, Cochimis and Pericues of Lower California, Gallimeros, Los Angeles Indians, and others of Southern California.

The Pimas say that the Creator took clay and mixed it with the sweat of his body, kneaded the whole into a lump, blew upon the lump till it was filled with life and began to move, and it became man and woman.*

Powers gives traditions of creation by several tribes of the California Indians, the Karoks, by Great Kareya, the Mattoals, Senels, Maidus, Miwoks, by the Coyote, and Palligawonaps by the Old Man.† Some of these traditions are silly enough, but contain one central idea, creation by a superior being.

The Clallams and Twanas have also some curious traditions. Those around the mouth of the Columbia believed that man was originally made by the Superior Deity, but in an imperfect state, being rather a statue of flesh than a living being. A second divinity, less powerful, pitied him, opened his eyes, gave him motion and taught him what to do.‡

According to Bancroft, the Ahts, Chinooks, Cayuses, Nez Percés, and Walla Wallas, believe that man was made from the lower animals, while the Selish, Nisquallies, and Yakamas think that animals were created from man [i.e., an ancient race who were foolish.—M. E.]. The Tacullies, of British Columbia, believe that the world was created by the musk rat; the Thlinkets, by Yehl, the raven; the Aleuts say the dog was the originator, but some say it was an old man who came from the mainland; the Tinnehs have a bird and dog origin; and the name of the Great Deity of the Konigas is Shljam Schoa, or Creator.§

The Chippewyans of British America believe that the world was first a vast ocean, and that the Great Spirit, in the form of a great bird, came down, whose eyes were fire, whose glances were lightning, and the clapping of whose wings was thunder, who rested on the ocean, and immediately land arose. He then created animals from the earth, and the Chippewyans from a dog.||

There are also traditions of the same event by the Okina-

* Bancroft's *Native Races of the Pacific*, vol. iii. p. 75.

† *Contributions to N. A. Ethnology*, vol. iii. pp. 35, 110, 171, 293, 358, 394.

‡ Dunn, *On Oregon Territory*, p. 91.

§ Bancroft's *Native Races of the Pacific*, vol. iii.

|| Dunn, *On Oregon Territory*, pp. 75, 76.

gans,* Hidatsas,† Indians of New York, Pennsylvania, and neighbouring States,‡ New Jersey,§ and Canada.||

By referring to what has been already said about the Supreme Being, it will also be seen that his name, *Creator*, has reference to this work among the tribes of Guiana, Michoacan, Durango, Mexico, Yucatan, the Aztecs, Mojaves, Apaches, Karoks, Yuroks, Maidus, Palligawonaps, Chinooks, Blackfeet, Newetsee Indians, Haidus, Thlinkets, Aleuts, Omahas, Algonquins, and Indians of New England.

(2) *Providence*.—I have already spoken of the almost universal belief in Manitous, or Guardian Spirits, and, every time there is an incantation by the Indians, it plainly says, We believe that the Supreme Being or his subordinates govern the world. I shall yet speak of the Deluge and worship, and these likewise prove a belief in Providence among the tribes there mentioned; for the Deluge shows that the Supreme Being has interfered among the affairs of men, while every time that a prayer is offered, a sacrifice made, or a religious feast takes place, they plainly say the same. The very name given to the Supreme Being by the Quiches is "He by whom we all live and breathe"; and by the Mexicans, "He by whom we live."

When the small-pox first visited the tribes around the mouth of the Columbia River, and they were unable to cure those sick with it, they became desperate, and believed that the Great Spirit had surrendered them to the Evil Spirit, because of their wickedness.¶

(3) *The Deluge*.—Almost identical with Providence, and yet of so much importance as to be treated as a subject by itself, is the Deluge, the punishment of sin in this world. First the creation, next the Deluge, and then the Indians know of but little more until about the present time.

The Peruvians say that, as in the first age of the world Con punished the human race with frightful barrenness, so in the second Pachamac vented his wrath in a deluge; an ark was constructed, and a small portion of the human family were preserved.**

According to the Brazilian tribes, two persons were saved

* *Council Fire*, October, 1879. † Mathew's *Hidatsa*, p. 47.

‡ *Contributions to N. A. Ethnology*, vol. iv. p. 49.

§ Hayward's *Book of All Religions*, p. 212. || *Ibid.*, p. 211.

¶ The ground cursed for Adam's sin (?).

** Tschudi's *Peruvian Antiquities*, p. 152. Another tradition is given in the *Journal of the Victoria Institute* for 1869, p. 297.

by climbing to the tops of the loftiest mountains, but some say four were saved.*

The original inhabitants of Cuba are said to have had a tradition, which speaks of a Noah, an ark, the animals introduced into it, and the sending out of a bird (in this instance a crow) to look for dry land, and its return to the ark.†

Bancroft devotes five octavo pages to the Mexican account of the Deluge, and also tells of that of Guatemala.‡ The Carios of Colombia likewise have their tradition of the same.§

The Pimas of California say that the Flood was known to the eagles, who told it to a prophet, but he paid no attention to it. After a time, he warned him a second time, and then a third time. A cunning wolf told it to another prophet, who, knowing the wolf to be a sagacious animal, prepared a boat for himself, and made provision to take with him all kinds of animals then known. Suddenly the winds arose and the rains descended in torrents; thunder and lightning were terrific, and darkness covered the world. Everything on the earth was destroyed, and all the Pimas except one good chief, Soho, who was saved by a special interposition of Providence, from whom the Pimas are descended. The Papagos claim to be descended from the prophet, who rode safely through the storm, and landed safely on Santa Rosa, and they yearly visit this mountain in Arizona in commemoration of this event, and it is said they will not kill a wolf.||

According to the Shastikas, long, long ago there was a good young Indian on earth, and when he died all the Indians wept so much that a flood came on the earth, rose up to heaven, and drowned all people except one couple. The Tolowas lay it to a rain, which drowned all except a man and wife, who reached the high land, and subsisted on fish, which they cooked under their arms, as everything was so water-soaked that no fire could be produced. From them all the Indians of the present day are descended, and also the game, insects, &c.; for, as the Indians died, their spirits took the form of deer, elk, bear, spiders, insects, snakes, and the like. The flood of the Karóks occurred at Klamath, and Taylor's Peak is the Ararat of the Mattoals. The Ashochimi say all were drowned except the Coyote, who planted birds'

* *Edinburgh Review*, art. "Deluge."

† *Appleton's Cyclopædia*, art. "Deluge." See also *Journal of the Victoria Institute*, 1869, p. 298, for another tradition.

‡ *Native Races of the Pacific*, vol. iii. See also *Journal of the Victoria Institute*, 1869, p. 298.

§ *American Antiquarian*, vol. iv. p. 177.

|| *Smithsonian Report*, 1871.

feathers, which sprouted, and turned to men and women; and the Maidus attribute it to a mighty rushing of the waters which came down the Sacramento Valley.*

The Twanas on Puget's Sound speak of it, and that only good Indians were saved, though there were quite a number of them. It occurred because of a great rain, and all the country was overflowed. The Indians went in their canoes to the highest mountains near them, which is in the Olympic range; and, as the waters rose above the top of it, they tied their canoes to the tops of the trees on it, so that they should not float away. Their ropes were made of the limbs of the cedar-trees, just as they sometimes make them at the present time. The waters continued to rise, however, above the tops of the trees, until the whole length of their ropes was reached, and they supposed that they would be obliged to cut their ropes and drift away to some unknown place, when the waters began to recede. Some canoes, however, broke from their fastenings, and drifted away to the west, where they say their descendants now live, a tribe who speak a language similar to that of the Twanas. This, they also say, accounts for the present small number of the tribe. In their language, this mountain is called by a name which means "fastener," from the fact that they fastened their canoes to it at that time. They also speak of a pigeon which went out to view the dead. I have been told by one Indian that, while this highest mountain was submerged, another one, which was not far distant from it, and which was lower, was not wholly covered.

The Clallams, whose country adjoins that of the Twanas, also have a tradition of a flood, but some of them believe that it is not very long ago, perhaps not more than three or four generations since. One old man says that his grandfather saw the man who was saved from the flood, and that he was a Clallam. Their Ararat, too, is a different mountain from that of the Twanas.

The Lummi Indians, who live very near the northern line of Washington Territory, also speak of a flood, and Mount Baker is their Ararat.

The Puyallup Indians, near Tacoma, say that the flood overflowed all the country except one high mound near Steilacoom, and this mound is called by the Indians "The Old Land," because it was not overflowed.

"Do you see that high mountain over there?" said an old

* *Contributions to N. A. Ethnology*, vol. iii. pp. 19, 70, 111, 200, 251, 290.

Indian to a mountaineer, as they were riding across the Cascade Mountains, about seventeen years ago. "I do," was the reply. "Do you see that grove to the right?" the Indian then said. "Yes," said the white man. "Well," said the Indian, "a long time ago there was a flood, and all the country was overflowed. There was an old man and his family on a boat or raft, and he floated about, and the wind blew him to that mountain, where he touched bottom. He stayed there some time, and then sent a crow to hunt for land, but it came back without finding any. After some time he sent the crow again, and this time it brought a leaf from that grove, and the old man was glad, for he knew that the water was going away."

The Yakima Indians also have their traditions, but, at this time, writes Rev. J. H. Wilbur, their agent and missionary, it is impossible to tell what was their original tradition, and what has been mixed with it from the early teachings of missionaries who were with them thirty or forty years ago.

When the earliest missionaries came among the Spokaues, Nez Percés, and Cayuses, who, with the Yakimas, live in the eastern part of the Territory, they found that those Indians had their tradition of a flood, and that one man and wife were saved on a raft. Each of those three tribes also, together with the Flathead tribes, has its separate Ararat in connexion with this event.

The Makah Indians, who live at Neah Bay, the north-west corner of the Territory, next to the Pacific Ocean, also the Chemakums and Kwilleyutes, whose original residence was near the same region, speak of a very high tide. According to their tradition: "A long time ago, but not at a very remote period, the waters of the Pacific flowed through what is now the swamp and prairie between Waatch Village and Neah Bay, making an island of Cape Flattery. The water suddenly receded, leaving Neah Bay perfectly dry. It was four days reaching its lowest ebb, and then rose again, without any waves or breakers, till it had submerged the Cape, and in fact the whole country except the tops of the mountains at Clympquot. The water on its rise became very warm, and as it came up to the houses those who had canoes put their effects in them, and floated off with the current, which set very strongly to the north. Some drifted one way, some another, and when the waters assumed their accustomed level a portion of the tribe found themselves beyond Nootka, where their descendants now reside, and are known by the same name as the Makahs in Classet, or Kwenaitchechat. Many canoes came down in the trees and were destroyed, and

numerous lives were lost. The water was four days in gaining its accustomed level."

It is the opinion of the Hon. J. G. Swan that this was simply a rising of the tides, and has no reference to the Deluge of Noah. I suggest, however, that if they had preserved any tradition of the flood in their migrations, when they settled at Neah Bay, where nearly all of their floods, though smaller, were caused by the rising of the tide, they would naturally, in a few generations, refer it to the same cause. The natives of the Sandwich Islands, where floods are caused in the same way, have a tradition of a great flood, but refer it to the rising of the tide.

The Indians of the Warm Spring Reservation in Oregon, and of the Fort Hall Reservation in Idaho, as far as I can learn, have no such tradition. It is possible, however, that they may have concealed it from their questioners, if they have one, as Indians do many of their traditions.*

The Creeks place the event before the Creation of Man. Two pigeons were sent forth in search of land, while the earth was still covered with water. At first they were unsuccessful, but a second time they returned with a blade of grass, and soon after the waters subsided. The Cherokees do not place the event until after the Creation, and say that it was revealed by a dog.†

The Iroquois,‡ Mandans,§ and the Hidatsas|| and the Thlinkeets¶ also have traditions of the Flood, but want of space prevents my giving them here.

Some have objected to these traditions, that perhaps they were not handed down from former ancestors, but were received from early traders and teachers; but for four reasons I cannot accept the objection: (1) Because the first travellers have often learned this tradition; (2) they will even now often distinguish between the traditions of their ancestors and the teachings of the first whites who came here; (3) they have names of their Ararat, the great monument of the Flood, as "Fastener" and "Old Land;" (4) the Mexicans, when discovered, although they had no system of writing, yet had a way of representing events by pictures, and this event was recorded among others.

* The writer, in the *American Antiquarian*, vol. i. p. 70.

† Schoolcraft's *Notes on the Iroquois*.

‡ *Edinburgh Review*, art. "Deluge."

§ *Transactions of the Victoria Institute*, 1869, p. 298.

|| Mathew's *Hidatsa Indians*, p. 9.

¶ Bancroft's *Native Races of the Pacific*.

Hence we must either conclude that all the traditions had little or no foundation, which would be absurd, or that there were a large number of floods, which would be almost as absurd; for in that event the tradition of one flood in each tribe could not have been preserved so distinctly, especially when a bird of some kind, and a branch of some tree, is often mentioned in connexion with it, or else that there was one great flood, so great that most of the descendants of those saved have preserved a tradition of it, and if so all must have descended from the few who were saved.*

(4) *Divine Teaching and Incarnation*.—There are many Indians who speak of having received instructions from a Great Being; and some of these traditions remind us of an incarnation, while some remind us more of the descent of one from the spirit world, as when the Lord told Abraham of the destruction of Sodom, than of the coming of Christ.

After the Fall of man, according to the Peruvians, it was the Son of Con, the Supreme Deity, who took pity on man, punished as he was, re-created him, and took special charge of him; but, after the introduction of the worship of the Sun, the Inca declared himself to be the Son of the Sun, and that his father had permitted him to become incarnate in order to teach the people the arts and sciences, and the will of the Supreme Being.†

Montezuma (after whom the Aztec king was named) was the God of the Pueblo Indians, who was once among them in bodily human form, and who left them with a promise that he would return again at a future day. In this may be recognised the Hiawatha of Longfellow, and the Ha-yo-wen't-ha of the Iroquois. It is in each case a ramification of a widespread legend among the tribes of America, of a personal human being with supernatural powers, an instructor in the arts of life, an example of the highest virtues, beneficent, wise, immortal.‡

The Zuñis believe that immediately beneath the Supreme Holder of the Roads are the twin children of the Sun, mortal yet divine, who fell for the salvation of mankind. They are the ancestors of the priests of the order of the bow.§

The Karoks of California have a conception of a Supreme Being called Kareya, who sometimes descends to the earth to instruct the medicine men, when he appears as a venerable

* *American Antiquarian*, vol. i. p. 72, Article by the writer.

† Tschudi's *Peruvian Antiquities*, pp. 147, 149.

‡ *Contributions to N. A. Ethnology*, vol. iv. p. 153.

§ *Popular Science Monthly*, June, 1882.

man, in close-fitting tunic and long white hair, having a medicine-bag. The Turoks have a legend of a person named Gard, who was almost perfect in life and teaching, but one day disappeared. They searched for him for a long time, when he again came from the land of spirits, reaffirmed his former teachings, and established the dance of peace, which is still known. The Pomos have an idea of a Great Man above, but he is a negative being, for the active principle, the creator, has always resided in the Coyote,—their idea of incarnation. The Maidus have a tradition of a child who grew up in four or five days, was more powerful than anybody, did many wonderful works, conquered a she-devil, redeemed his tribe from servitude, taught them many things, went to heaven, and once reappeared in the form of the rainbow.* The name of the Son of the Creator, according to the Pimas, was Szeukha, who lived in the Gila Valley.†

The Twanas and Clallams of Washington Territory are as full of the *tradition* of the coming of Dokibatl, the Changer, as they are of the *practice* of incantations. He changed worthless men into animals, stones, and mountains, taught them many things, did other wonderful works, and his foot-tracks still remain, as they believe, in a rock. I have never satisfied myself that it was a tradition of the Son of God, but when they had learned of Him they said that Dokibatl was the Son of God, and occasionally called him Jesus.

The Iroquois have a beautiful tradition of one who came from heaven, set a good example, sacrificed his daughter to the Supreme Being, at which time he was much dejected, said they must submit to the divine will, and again ascended to heaven amid beautiful strains of music.‡

(b) *What man owes to the Supreme Being and other deities.*

(1) *Thanksgiving*.—As a favoured being, man should thank these spirits.

In Peru, when a poor labourer ascended a hill, he unburdened himself and said three times, "I adore him who enables me to endure, I give thanks to him who has given me strength to endure thus far"; and then a slight offering was made, it might be a hair of the eye-lash, a twig, straw, handful of earth, or small stone. These small heaps of earth and stone exist to the present day. Of their four great feasts, the first was in the summer, and was a national feast of gratitude. It is fully described by Tschudi.§

* *Contributions to N. A. Ethnology*, pp. 24, 80, 161, 298-305.

† Bancroft's *Native Races of the Pacific*, vol. iii. p. 78.

‡ Schoolcraft's *Notes on the Iroquois*.

§ Tschudi's *Peruvian Antiquities*, p. 153.

The Viards of California have an annual thanksgiving dance in the autumn, which is followed by an oration from an old man, who recounts the mercies of the year. The Wailiki have their black bear dance when they have killed one of these animals, and the clover dance when it gets juicy to eat; the Yukis, the green corn dance; the Kato Pomos, the acorn dance; the Wintuns, the pine-nut and clover dances; and other tribes the manzanita, first grass, second grass, and fish dances, because of the gifts of these kinds of food.*

The tribes around the mouth of the Columbia River had a festival at the opening of the salmon season, and offered the first salmon to the Great Spirit as a thank-offering; and the Knistenaux have private feasts in acknowledgment of mercies.†

The Omahas when the bison are discovered go through a ceremony, saying, "Thanks, Master of Life";‡ and among the Dakotas the feast of first fruits is the most common, in gratitude for the increase of the earth and the fruits of the hunt. On many occasions, even the most trivial, the gods are thanked, and a small thank-offering made.§

The Pottawottamies likewise had a day of thanksgiving, when they heard a speech from an old man, worshipped the Great Spirit and thanked him for his care.||

(2) *Prayer*.—Man, as a weak being, should ask assistance from the more powerful.

The Patagonians of southern, and the Araucanians of northern, South America prayed.

The Peruvians implored the protection of their deity on a new-born child, and implored assistance at their second national feast in the autumn and at the third in winter for protection and aid.¶

Habel gives eight figures of sculptures on which are the Deity in the upper part, and in the lower part a person with upturned face, in adoration, while curved lines proceeding from the mouth of each supplicant show that they were praying.**

Bancroft gives more than twenty-six octavo pages of Mexican prayers on various occasions, and also says that the

* *Contributions to N. A. Ethnology*, pp. 105, 118, 133, 155, 237, 324, 354, 208.

† Dunn, *On Oregon Territory*, pp. 73, 87.

‡ Long's *Expedition*, 1819-20, vol. i. p. 207.

§ *Gospel among Dakotas*, pp. 77, 85.

|| McCoy's *Indian Missions*.

¶ Tschudi's *Peruvian Antiquities*, pp. 153, 191, 192.

** Habel's *Guatemala*, pp. 64-86.

Aztecs offered prayers several times a day in the temple of the Sun.*

The Pueblos of New Mexico had periodical assemblages of the authorities and people for offering prayers in order to supplicate favours; and sometimes one or more persons will separate themselves absolutely from all intercourse with the world for eighteen months, and devote themselves to prayer for the people.†

The Maidu Indians observe the acorn dance in order to insure a bountiful crop of acorns, when two venerable silver-haired priests offer a solemn supplication to the spirits for the favour desired; and an instance is given of a Karok Indian praying while hunting.‡

The writer has learned of forms of prayer formerly used by the Twanas and Clallams of Washington Territory. Swan speaks of the same practice among the Makahs;§ Dunn among the Knistenaux, and Rocky Mountain Indians;|| Pond among the Dakotas;¶ and McCoy among the Pottawottamies.**

One image has been found in Tennessee, which evidently belonged to the Mound Builders, in which the figure is kneeling, and the hands are clasped across the breast in the attitude of prayer.††

Other reference has been made to this subject in the part of this paper which speaks of the Supreme Being, in regard to the Indians of Guiana, the Zuñis, Okinagans and Winnebagoes. Much too of their incantations, spoken of in the part which relates to the Good Spirits, so very common among all tribes, is really prayer to their guardian spirits.

(3) *Sacrifices*.—Man as a sinful being needs atonement. In connexion with these sacrifices are priests, temples, and altars.

In Peru the earliest ideas of the race were that mankind became very wicked, for which they were terribly punished; but they were restored by the Son of the Deity, whereupon they offered sacrifices in the temple in a most abject manner. When the worship of the Sun was introduced, sacrifices became very numerous, and included their most valuable

* Bancroft's *Native Races of the Pacific*, vol. ii. chap. ix. and vol. iii.

† *Contributions to N. A. Ethnology*, vol. iv. pp. 151, 153.

‡ *Ibid.*, vol. iii. p. 285.

§ Swan's *Makah Indians*, pp. 61, 62.

|| Dunn, *On Oregon Territory*, pp. 73, 219.

¶ *Gospel Among the Dakotas*, p. 57.

** McCoy's *Indian Missions*.

†† *Aboriginal Remains in Tennessee*, p. 44.

possessions, 200,000 llamas having been offered at one time; and sometimes even their children were offered. Their temples were numerous, large, and costly, whose ruins still exist, and their priests also numerous, held in great esteem, carefully educated, and under a high priest who claimed to be a descendant of the Sun.*

Habel in his *Sculptures of Guatemala*† gives several figures, which have been referred to in the section on prayer, and in connexion with them are men in the act of offering sacrifices, fierce beasts, and human victims, with the altar and sacrificial knife.

The priests, sacrifices, and temples of Mexico, Zapototec, and the Magas and Toltecs have become somewhat famous. When discovered, their temples and high places reminded one of Babylon, there having been two thousand in the city of Mexico, and forty thousand (as estimated) in the whole country, with an ecclesiastical body estimated at nearly a million! Their sacrifices included human beings, twenty thousand of whom were offered annually in the city of Mexico, and eighty thousand at the dedication of one temple.‡

The 1st of September is a red-letter day among the Karoks of California, when the great dance of propitiation is held, at which all the tribe are present, and also deputations from other tribes, and in the valley of the Geysers stands an image of stone, which tradition says was made there by an old prophet of the Ashochimi, as a propitiation for sin on account of earthquakes and sickness.§

Cushing speaks plainly of this belief in sacrifices, of the priests and temples among the Zuñis,|| Dunn testifies to the idea of sacrifices among the tribes around the mouth of the Columbia River, the Knistenaux, and the Rocky Mountain Indians,¶ and the writer has found the same among the Skokomish and Clallam Indians of Washington Territory.

Among the Dakotas the most primitive and ancient form of worship is sacrifice. It is the foundation of all their ancient ceremonies, and shows itself in every-day life. It may be something small, as paint, or the down of the female swan, or it may be dog-meat, one of the greatest luxuries a

* Tschudi's *Peruvian Antiquities*, pp. 147, 157, 197, 241, 288.

† Appleton's *American Cyclopædia*, art. "Am. Antiquities."

‡ Bancroft's *Native Races of the Pacific*.

§ *Contributions to N. A. Ethnology*, pp. 28, 200.

|| *Popular Science Monthly*, June, 1882.

¶ Dunn, *On Oregon Territory*, pp. 71, 90, 219.

Dakota Indian can have for himself; but the highest form is self-immolation, and exists in the Sun-dance. Previously to the latter the rite of purification is performed so as to make him and his sacrifice successful.*

The natives of Virginia had great reverence for their priests;† the Narragansett Indians of New England, the Natchez of Louisiana,‡ the Creeks and Cherokees had temples, in which they kept perpetual fires burning, priests, and altars for sacrifice; and, among the external ceremonies of the Indians of Indiana and Ohio, were sacrifices for the purpose of propitiating the Deity.§

One great class of mounds left by the Mound Builders is that for religious purposes, embracing altar or sacrificial mounds and temple mounds. Both are very numerous. The altar mounds contain altars, ashes, and often the remains of sacrifices and sacrificial articles, some of which are the most valuable articles which they had; one having been found in Iowa which contained figures cut in stone, showing a sacrificial scene, in which three human victims were offered to the Sun. Some of the temple mounds are very large, the largest of all being near East St. Louis, 700 by 500 feet at the base, 450 by 200 feet at the top, and 90 feet high.||

(4) *Other Forms of Worship*.—Bancroft devotes five octavo pages¶ to a ceremony of purification of infants by water among the Mexicans somewhat akin to infant baptism at the time the child is named. It may or may not have been a relic of primitive baptism, but it was an emblem of purification from sin, and several prayers were offered in connexion. It was done by the midwife. Among the Mayas it was done by the priest, whereby the child received a purer nature, without which it could not live a good life or get married. He also says that ten or twelve writers speak of baptism in some form, and that the use of water, more or less sanctified or holy, in a rite avowedly purifical for inherent sin, runs back to a period far pre-Christian among the Mexicans, Mayas, and other American nations.** It was also common among the Peruvians west of the Andes in a certain form, though it had little in common with the Christian sacrament, except the giving of

* *Gospel Among the Dakotas*, pp. 87, 88.

† *Hayward's Book of All Religions*, p. 214.

‡ *Smithsonian Contributions to Knowledge*, vol. ii.

§ *McCoy's History of Indian Missions*.

|| *Tschudi's Peruvian Antiquities*, chap. viii.

¶ *Native Races of the Pacific*, vol. ii. chap. v.

** *Ibid.*, vol. iii. p. 49.

the name. It was intended to conjure away all future malign influences.*

Bancroft also says that a ceremony akin to circumcision was practised by the Aztecs, Totonacks, and Mijes. It was done by the high priest and assistant, and mostly among the children of great men.

Fasts were common among the Peruvians, Dakotas, and California Indians, so that, says Mr. Powers, of the latter, one is reminded of the ancient Israelites.

Dancing, too, as a religious ceremony, was practised by the Peruvians, California and Puget Sound Indians, Dakotas, Pueblos, and a large number of other Indians.

Among the Navajos, the person who touches or carries a dead person is unclean, and, after doing so, puts off his clothes, and washes himself with water, before mingling with the people.†

IV.—MAN'S FUTURE ABODE.

The happy hunting-grounds of the Indian are proverbial; a belief in future punishment is not so widespread, yet somewhat common.

The name of the heaven of the Peruvians was "Hanau-pacha," or "upper world," and that of the place of punishment "Ucu-pacha," or "lower world," and sometimes "Supaya," or "devil's house."‡

The Mexicans had more than one heaven for different classes of people, and their hell involved no more suffering than that it was a place of utter darkness.§

"Seh-un-yah" was the name of the place where the Pueblo Indians came from, and to it they went when they died. It was under Great Salt Lake, and is a big Indian Pueblo.||

The Achomawi of California hold that the righteous reach the spirit-land quickly, but the wicked walk for ever and ever, and never reach it; a very fitting emblem to the lazy Californian of future punishment.¶ The Karoks, Yuroks, Tolowas, Keltas, Tatus, Kato-Pomos, Poam-Pomos, Senels, Ashochimis, Patwins, Wintuns, and Maidus, of California also have some ideas of a very happy place for the good, but they

* Tschudi's *Peruvian Antiquities*, p. 180.

† *Introduction to Mortuary Customs*, p. 14.

‡ Longeon, in *N. Y. Tribune*.

§ Plato's *Immortality of the Soul*, p. 170.

¶ *Contributions to N. A. Ethnology*, vol. iv. p. 152.

¶ *Ibid.*, vol. iii.

give different descriptions of it, some of which are full of nonsense, and most of them have some kind of punishment for the wicked; but with many it is not a place, but a transmigration into some bad animal. The Miwoks, Yokuts, and Monos, as they believe in annihilation, have no place of future rewards or punishments.*

But the limit of this article forbids my giving any detailed statement of the beliefs of all the tribes; I can do but little more than to name them. The Nez Percés, Flatheads, Bella-Bellas, Chippewyans, and Indians around the mouth of the Columbia River, believe both in a place of future rewards and punishments,† as do also the Skokomish Indians; but the latter do not fear hell very much, as only the very bad go there. The Alaskans believe that the bodies of those who are burned will be warm in the next world, and the rest cold. The Dakotas believe in a land of Good Spirits, but some believe in a punishment only in this life, and others in a future house of the Bad Spirit.‡

The Arikarees, Osages, inhabitants of the West Indies,§ Omahas,|| Sacs and Foxes, and Caddoes,¶ inhabitants of New England and New Jersey** believe in both a state of rewards and punishments, and the Iroquois†† and Eskimo in, at least, a place of happiness.‡‡

According to Bancroft, in his *Native Races of the Pacific*, the Thlinkets, Sicannis, Kenai, Tinnehs, Aleuts, Clallams, Nez Percés, Flatheads, Haidahs, Nevada Indians, Snakes, Pimas, Maricopas, Comanches, and Miztecs believe in a heaven; the natives of Millbank Sound, Selish tribes, Chinooks, Californians, Mojaves, Yumas, Mayas, and Nicaraguans have both a heaven and a hell; the Ahts, Apaches, and Pend O'Reilles believe in neither; the Nez Percés, Flatheads, and Haidahs believe in the restoration of the wicked; and the Apaches in metempsychosis.

Even among the relics of the Mound Builders has been found a stone which had on one side a representation of a sacrificial scene, and on the other one of the happy hunting-grounds.

Resurrection.—Prescott says that it was a belief in the

* *Contributions to N. A. Ethnology*, vol. iii.

† Dunn, *On Oregon Territory*.

‡ Mathew's *Hidatsas and Gospel among the Dakotas*.

§ Bradford's *American Antiquities*.

|| Long's *Expedition*.

¶ *Annual Report, Bureau of Ethnology*, 1879-80, p. 95.

** Hayward's *Book of All Religions*. †† *Ibid*.

‡‡ Major J. W. Powell, Article in *San Francisco Pacific*.

resurrection which led the Peruvians to preserve the bodies with so much care even to the embalming of them.

End of the World.—The Peruvians believed that the end of the world would come after a frightful famine; that the sun would be obscured, and the moon fall into our planet, and that everything would be enveloped in thick darkness.* The Senels of California also believed in the final consumption of the world by fire.†

Conclusions.—Thus some of the facts in regard to the religious belief of the aborigines of America have been enumerated. I will not stop to prove that they are held by the great majority of the rest of the world, both Christian and heathen. It remains to draw some conclusions from them.

(1) They must be vital. The Bible, indeed, gives them to us, stating their truth, and that, as far as they have reference to us practically, they are for our good. But some men, whose opinion is entitled to respect, deny this. Yet, outside of the Bible, there comes this testimony from the people who have inhabited a country *the farthest removed from the birth-place of the Bible and the longest isolated*, saying that they believe in and practise these principles. Notwithstanding the fact of this wide separation, and also that they have surrounded their beliefs with so many savage customs, yet inside of this rubbish the principles still live. This shows how well they are adapted to the wants of mankind. Thousands of miles, thousands of years, the utmost ignorance and most savage practices cannot kill them, when once planted in the hearts of mankind. Or, if we believe that these ideas are *innate*, we must certainly believe that they are planted in man's heart by the Creator, and for his good.

(2) But they especially bring a strong argument to prove the unity of the race.

It is not claimed that a belief in these ideas is *universal* in America. Some of them are more common than others,—as the belief in a Supreme Being, and lesser divinities, the immortality or future existence of the soul, the creation, and a future state of happiness. The evidence is strong that others are not so widespread,—as a belief in a devil, a place of future punishment, sacrifices, and the Deluge.

These ideas must probably have been originated in one of three ways: development, tradition, or have been born in man.

* Tschudi's *Peruvian Antiquities*, p. 152.

† *Contributions to N. A. Ethnology*, vol. iii,

Some believe that religion has developed in savage minds on account of the felt want of it. But, if this were so, it is strange that some of these ideas have developed so nearly alike among such different people. True, some may hold to the idea that a belief in a Supreme Being and lesser deities, the immortality of the soul, providence, and a future state of happiness has been developed, and it may be a little difficult to prove that it is not so. But can it be claimed with any degree of reason that a tradition of a deluge to punish sin was developed because man wanted it, or that man wanted to believe himself a sinner, or in a devil, or a hell, or prayer, or sacrifice? The facts are decidedly against this idea. We see civilised men who reject the Bible, and does a felt want in their hearts make them pray, or offer sacrifices, or believe themselves sinners, or accept the idea of hell? It is not so, in fact. Such men are the first to reject these ideas. The development is the other way. Hence we must believe that *some* of these ideas were not developed, and, if some, perhaps *all*.

(3) Are they innate? This may be held in regard to some of them, as a Supreme Being and immortality. It is very difficult to prove it, or to prove the contrary, because all nations, or nearly all, believe them, and teach them to their children about as soon as they teach them anything. Yet, as far as I know, the weight of evidence is against it. Deaf and dumb children, who have never been taught by their parents of a God, when they have been taken to an asylum, have, I believe, almost or quite uniformly been found to have no idea of a God.

I have also given some facts about certain tribes, among whom there is no positive proof that they believed either in a Supreme Being or immortality. I have given the statements as the observers have written them, and am not prepared to deny their truthfulness, nor to assert that further investigation may not prove them false.

If these two ideas are innate, it simply proves the existence of a God and immortality, for I can hardly believe how they should be born in man and not be true.

(4) But, if they are not innate, we are forced to the last alternative, *i.e.*, that they have been handed down from some one who received these truths by revelation. And, whatever we may think in regard to these two subjects, I am not aware that any persons claim that all the other subjects discussed are innate; as, the creation, deluge, sacrifice, future punishment, sin, divine teaching, and, perhaps, an incarnation. If these are neither developed nor innate, they must have come through

teaching. This becomes the more apparent when we notice the minutiae of some of these subjects, which are believed by many; as, for instance, that the Supreme Being is a spirit, lives out of the world, is immortal, invisible, omniscient, omnipresent, good, sees our thoughts, and punishes evil; that the greatest evil spirit is less powerful than the greatest good spirit; that creation was by command, sudden; that there was darkness, spirits moved on the water; that man was first made from clay, woman afterwards, and sometimes when men were asleep; while there are still so many absurdities among the traditions,—that the deluge was sent because man was wicked, but few were saved, a high mountain is mentioned, and a bird is often connected with the story. Then some things in regard to the incarnation are singular; sacrifices often involved the most valuable blood, and were connected with altars, temples, priests, and a high priest; prayer is connected with fasts, and thanksgiving with feasts, &c. It can hardly be accepted that all these minute circumstances, agreeing so well with the belief of many of the rest of mankind, were either developed or born in man. If not, they must have come from those who had intercourse with the Creator, either on this Continent or the Eastern. There is not the slightest evidence that it was on the Western, there is much that it was on the Eastern.

If now we were to reason *à priori*, we would expect to find things much as they are. Had man been created in Asia, and received a revelation from Heaven, we should expect that the further his descendants had wandered from that centre, and the more they had become ignorant, the less they would know of these truths, and the more they would be covered with rubbish, while it would not be strange if some of them should be lost in some places. The idea of a Supreme Being, of lesser protecting deities, immortality, a providence, and future happiness would be kept because they are so great and welcome. Yet, among some of the lowest people, it would not be strange if some of these ideas should become so degraded that they could believe that the Coyote or Raven might contain the creating principle, and that some might lose them. Other ideas, not so great, natural, or acceptable, would be less likely to be preserved,—as a belief in a devil, a deluge, a teacher from Heaven, thanksgiving, prayer, and sacrifice; nor would it be strange if some should believe the Coyote to be an incarnation. This, too, we find to be a fact. The most civilised peoples of America have preserved these truths the best, and the most degraded have them now the least.

Finally, to sum it all up, the testimony of the savages points toward the truth of the Bible in regard to all these subjects discussed, and especially to the fact that "God hath made of one blood all nations to dwell on the face of the earth," and likewise that "Eve was the mother of all living."

THE CHAIRMAN (Surgeon-General C. A. GORDON, C.B.).—I am sure I but express the general feeling of all present when I say that we have listened with the greatest interest to this very valuable paper, and that we are deeply indebted as a Society to the author. While we regret his absence, we feel that every justice has been done to his paper by Mr. Cadman Jones, who has been so good as to read it. I am sure those who have travelled much in different countries must be well aware how applicable are many of the remarks made with regard to the superstitions and beliefs entertained by the natives of America to those entertained in other parts of the world. I myself will not take up the time of the Society by doing more than allude to those that prevail throughout India, both on the Bengal side and on the westward side, and also those that prevail in certain parts of Africa. Nor need we go to India or Africa for many of those beliefs. I recollect, when a boy in the Highlands of Scotland, that many of the superstitions so vividly portrayed in this paper were most rigidly believed in the Highlands; and some of the remarks in the paper brought to my own mind very vividly the superstitions and tales with which, as a boy in the Highlands, I was familiar. There are some gentlemen here, I believe, who have a special acquaintance with the subject brought before the Society, and I hope they will favour us with their remarks to-night. I have just received an intimation that the Marquis of Lorne has written, expressing his regret that he is unable to be present. I am sure, had he been here, some of the information he would have been able to give would have been most valuable and interesting. May I ask the Rev. Canon Hurst to be so good as to favour us with some remarks.

Rev. CANON HURST, B.D.—I can only say with the Chairman that I have listened with the greatest pleasure to this paper. I can also remember, when I was a boy, some similar superstitions amongst persons that I knew in this country, and can testify that many of the things stated in this paper are true. I do not say any of them are not true, because it is impossible for any one man ever to become acquainted with all that is going on in every part of North and South America. This paper tries to deal with almost every tribe of Indians in the whole of America and they are so very different, and above all so different in their ideas, that it is utterly impossible for any one person to do more than collect information on these matters from various authors. I have seen a good deal of Indians in Canada, and heard much about them in the west and north-west of America; and, although I may not have known from personal observation many of the things stated in this paper, yet, at the same time,

I have heard and seen similar things, and had them related to me by the Indians themselves. We could not help feeling, I think, as we listened to this paper, that it is amongst the Indians, as it was amongst the Greeks and Romans and others in old times, that "they had gods many, and lords many." Both the Old and the New World are alike in this; and this helps to prove the identity of the race. There is among the Indians, so far as I have seen, no little confusion about their gods; and it is not surprising, for they have no written books, and what comes down by tradition may become confused. I was much interested in what is stated in the paper about the Manitou. Every tribe of Indians I know has a Manitou. But many of them make no distinction between their Great Spirit and Manitou. They are both one. The Ojibway tribe, which is, perhaps, the most intelligent in British North America, and the most widely spread, all look up to Manitou as the Great Spirit, and the Great Spirit is their Manitou. I was greatly struck with one statement in the paper, but I cannot find fault with it, because the beliefs of the Indians vary so much. But the idea seemed to be thrown out that they do not offer sacrifices to Manitou. Well, some may not, but others do. For instance, some of the Ojibways do. They try to propitiate, by offering prayers and sacrifices to Manitou. An Indian informed me that his father used to travel a long way and make sacrifices when he had done anything wrong, to propitiate Manitou. They will go up a very high hill, to an almost inaccessible place, and there deposit something precious to them. To part with that something, and take it up a high hill, and deposit it in the cleft of a rock, is their sacrifice. Perhaps what was most precious to them was a plug of tobacco. I have known an Indian travel many miles to the Falls of Niagara, and there take out a plug of tobacco and throw it into the Falls, and comfort himself saying, "There now, Manitou will have a good smoke to-night!" (Laughter.) That could be nothing but propitiation. With regard to the traditions about the Flood, I agree with the writer that we must take them *cum grano salis*. They have, no doubt, real traditions of the Flood, as they have of the Creation and of the Fall of man, which, I think, is not mentioned in the paper; but they have occasional floods in the north-west of America, and they are very terrible. Sometimes they carry houses with them, boats drift away, the crews are quite lost, and find themselves in places in which they had never been before; and a good many of these traditions about the waters coming down this, that, and the other valley arise from occurrences such as I have described. I remember Bishop Anderson, who still lives at Clifton, giving me a description of a flood in the north-west while he was there, and he has written an account of it. There is a thrilling novel, written, I think, by Ballantyne, called "The Red Man's Revenge," and published in *The Boy's Own Paper* by the Religious Tract Society, which gives about as good a picture as can be of a similar flood in the north-west of America. But, drop all this, and yet there remains an aggregation of evidences of a tradition of what could be nothing else but Noah's flood, some of them wonderfully

correct and surprising, and even of the Fall of man, in language that struck me sometimes as running very parallel with the Scripture account. The story of the Fall was related to me something like this,—that there was a deputy from the Supreme Being came down to the earth and told the people what they should do and what they should not do, and if they went contrary to the Supreme Being they would be punished. The story ran that he came down by a rope, and that he forbade them to touch that rope, or something would happen. But a woman, whose curiosity was great, was anxious to try the rope. She did so, and the rope broke. She was hurt, and never recovered from that hurt. Here a woman is concerned, a hurt, and no full recovery. I could mention other things, but it is now too late, and if I did they could add nothing to this paper. I have in my own mind a full conviction that the Indians have traditions which correspond with Holy Writ; but there are things in their beliefs which I question whether they are derived from tradition at all—at least, in the same way. For instance, we read of Sun worship. Whether that was developed before the Flood is a question. If not, whence did they get it? It is not at all unlikely that, if persons drifted in very early times to the Continent of America, and settled here and there and became heads of tribes, others may have drifted over in subsequent ages, and thus a considerable amount of tradition has come to them gradually from persons arriving in small batches. In consequence of this there has arisen a mixture of ideas. I think this not unlikely, for we find among them things which could hardly have come from times so early as before the Flood. I am sorry to have said so much; but I will just add one thing—that the peculiarities in the traditions among the Indians, some believing in a devil and some not, some believing in a future state and some not, are easily understood. If you take, say, a hundred people from this country, and let them drift to a land where there is no one living, and they become heads of tribes, then you can imagine that their descendants would have different ideas. Their ideas would, more or less, correspond with those of their patriarchs. So with the Indians; and this, I think, will account to a great extent for the great differences among them. (Cheers.)

Rev. T. DUNN.—I should like to make a few remarks on one or two things brought forward in this paper. I have seen a great many of the North American Indians, both those in the northern part of the United States, and also the Indians who live along the coast of British Columbia, from Puget Sound to Alaska. I think one cannot but be struck with the resemblance of these Indians, in their features, to the Mongolians of Eastern Asia; and I cannot help thinking, and believing, that these Indians came, originally, across Behring's Straits from Asia to America. My reason for thinking so is that a canoe voyage of that distance is not an unknown event, even in the memory of living men. I cannot call it a tradition, because living men remember their fathers telling about it—about a canoe being driven by the winds from Queen Charlotte's Islands to the Sandwich Islands, that they lived there some years, built a kind of sloop, and came

back again to their own land, Queen Charlotte's Islands, on the Pacific Coast. I make these remarks, in connexion with what I read on the second page, that "when and how they came here, and where they came from, are questions which are not satisfactorily answered." Again, many of the customs are so similar to what we see in Asia. This is another striking fact. For instance, what the Red Indians on the Pacific Coast call devil-dancing, the healing of the sick by devil priests, is exactly what I have seen among the Cingalese people in Ceylon. The Indians on Queen Charlotte's Island, in order to drive out the evil spirit from the sick person, make little images of the person, on which they operate; and that is what the devil-dancers do in Ceylon, and among the Tamils of the South of India, and I have no doubt in many other parts of India. Then, the customs of the inhabitants are so much like those which I have heard described as existing among the New Zealanders. That is another striking fact. Then, on page 297, we are told that "the Twanas, or Skokomish Indians of Puget Sound, believe in a great being, not the Saghalie Tyee, or Wis Sowulus or Chief above, of whom they have learned of the whites, but one whose name is Dó-ki-batl, the Changer." The word "Saghalie Tyee" is not in the native language, but in what we call the Chénook jargon, which is partly made up of English, Canadian-French, and Indian words, and was introduced by the Hudson's Bay traders. That word "Saghalie Tyee" is the exact rendering of the Northern Pacific Indian for the chief who lives above; but the "Saghalie Tyee" of the Chénook, of course, came later than the Indians' own language. Therefore, the Indians had known of the "chief above" before the white man came there at all. Again, on page 301, the writer says, "The Nass Indians around Fort Simpson, British Columbia, carry the images of their gods in a box." Now, I have lived amongst these Indians, and I have never seen anything in the shape of a god. They do not worship gods as images. I showed them, several times, small images of Buddha, which I had got from Ceylon, and they laughed at the idea of worshipping such a thing as that. The things the author refers to as being kept in a box are the insignia of office of the chief. For instance, they keep in a box a piece of copper. Now, copper was in former times among the Indians very valuable, and the chiefs especially had a right to possess it, and the greater the chief the greater his piece of copper. But I am not aware that they worship copper in any other way than many a white man worships gold. They call these things "nlthoduksha," that is, anything valuable or sacred to the person who keeps it. They are handed down from one chief to his successor. They are a kind of heirloom, but not images or gods which they worship. They believe in evil spirits certainly, and I was struck by the description the writer gives of a spirit in the shape of a bird. Now, the Niskah Indians believe in a spirit-bird, and they say thunder is caused by the flapping of his wings, and lightning by the flashing of its eyes. Thunder out there is so rare, that for twenty-five years it may not be heard more than three or four times. When the Indians do hear it they are exceedingly frightened, and

think the spirit-bird is angry with them and has come to terrify them. There is nothing in the shape of sacrifice among them. The Indians believe in a future life, but the belief is very vague indeed; I have never been able to find that they had any idea of hell as a place of punishment, but they believe in the heaven which is above. It is only the chiefs who can be happy; the others go to the same place, but they go to attend on the chief as his slaves. On the death of a chief it was the custom of the Tongas Indians, south of Alaska, to kill one or two slaves of the chief in order that the slaves might accompany the chief. I knew one man who escaped from Alaska and came to British territory to avoid being killed. I think these are all the remarks I need make; the others which I have in my mind are similar to what Canon Hurst has already made. (Cheers.)

Rev. F. A. ALLEN, M.A.—As a member of the "Americanist" Society, which is very much interested in this question, I have for years tried to draw the attention of the British public to American archæology, but I could get few to join us except Sir John Lubbock and one or two specialists. We had a congress at Brussels, and the next is to be at Turin, I think next year; and I hope the English will show a little more interest in the subject than they have hitherto done. It may occur to some to say—Why should American archæology throw light on Eastern archæology? I think the reason is—as Sir J. W. Dawson said in a series of articles to *The Leisure Hour*—that America is a sort of microcosm of the whole history of man. At the present day it is the only continent where we see in miniature all that we know of the past. The stone period, the bronze period, the iron period are still going on there, and I think we can hardly see that anywhere else. Then, the American race, so long secluded, has developed more homogeneity, more individualism, and thus we are able to trace their legends to the fountain-head. This is why it is so important to study American archæology. I believe Sir J. W. Dawson considers it is the key to the proper understanding of the early history of the human race.*

The CHAIRMAN.—I am very sorry that this very interesting meeting must be brought to a close. Before we separate I may be allowed to make a few remarks as to my own personal experience. I was very much interested, and I am sure we all were, to hear the remarks made with regard to the question of American archæology as bearing on that larger question of the distribution of our race. A remark of special interest to myself was the connexion between the native American Indians and the Mongolian inhabitants of Eastern Asia. By way of giving strength and

* Mr. Allen wishes to add, with regard to the remark on p. 301—as to the Nass Indians around Fort Simpson "carrying the images of their gods in a box,"—that he is glad to see the author is careful to allude to this statement as given, not on his own authority, but as reported in Mr. Dunn's work; he (Mr. Allen) cannot regard it as a fact, for "it is utterly unlike these tribes to have idols at all, and the images in the box must have been either totems (tribal crests), or maces, or insignia of office."

confirmation to that remark, I would mention that a good many years ago, while serving in China, I had a very interesting passage up the coast from south to north, and among my fellow-passengers was Sir Robert Hart, a gentleman whose name is familiar to you all. He had taken a world of interest in this question of the distribution of man, and he had inquired among the different Pacific islands to see whether he could trace any grounds for the belief that the American continent owed its population to the Asian continent.* In the Aleutian Islands he observed a peculiar circumstance, which was the manner in which the natives reckoned their relationship, and he found that it coincided with that in use among the Chinese, and he could trace it nowhere else. I heard on Saturday from an American gentleman, with whom I was talking of the descendants of the slave population, that the descendants of the original Africans who went to America as slaves are assuming a less black colour than their forefathers, showing, of course that a modification takes place in man's appearance according to locality. If a change is observable in so short a time as two or three generations, I can readily believe that it would be very marked indeed in a number of centuries. When I was in China, among other places I visited were the native prisons in Canton, and I saw a number of prisoners in all conditions of wretchedness; but what struck me was that, their hair having been allowed to grow long, their features assumed almost exactly the characteristics of those representations of American Indians with which all are familiar. Of course, they had flat, high cheek-bones, which indicated the Mongolian race distinctly. But, inasmuch as the modification I have alluded to in the African race is perceptible in so short a time as has elapsed since the slave trade took place with America, we can suppose how a similar modification would take place in the course of generations in the Mongolian population who have passed to America. Another circumstance I noticed was an illustration of the way in which a race may become distributed. Quite lately I had occasion to cross the Bay of Bengal from the Carnatic coast to Burmah. We experienced by no means favourable weather, but, as we approached the mouth of the Irrawaddy, I was surprised to find a native craft signalling us by loading her masts with flags. We knew she wished to speak, a boat was lowered and the ship communicated with. Shortly afterwards a native Burman and his canoe were hoisted down to the steamer's boat and brought on board. The story was this:—The man had been out fishing on the Irrawaddy, a flood came and swept him out to sea, and he was buffeting about in the Bay of Bengal for days until he was fortunately picked up by this native craft. The idea that struck me was that this was an illustration of the way in which the populations of continents may be transmitted to islands and other continents. Within a parenthesis I may say that the reason they covered all their masts with bunting was that they knew they had the proper signals on board, but,

* This subject is also referred to in Mr. Whitmee's paper, vol. xiv.—ED.

not knowing exactly which they were, they thought the best way was to put up all they had. (Laughter.) There was allusion made to dancing in connexion with the cure of diseases. Those who have been in India must be aware of the ceremonies performed to Sitala, the goddess of small-pox, to ward off the small-pox. I recently had an opportunity of seeing dances performed to the goddess of cholera, whose name is remarkable—Maree Ama, “Maree” being the Hindustani for “great sickness.”

The meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

By the Reverend R. COLLINS, M.A., late Principal of Cottayam College.

Orthodox Christians are not unfrequently accused of coming to the study of such subjects as this with preconceived notions, towards which they make all evidence to bend. It may, perhaps, have been so in some instances; and the disease may sometimes have affected even those who do not belong to that class of persons. But this is, therefore, all the more reason for approaching the religious history of man with the strictest guard over any tendency to prejudice.—Do such facts as those, so interestingly brought together in Mr. Eells’s paper, candidly and honestly considered, make for the truth of the theories either of Mr. Herbert Spencer or Mr. Frederic Harrison?

One subject touched upon in this paper is instinct or intuition. Is there not a good deal of confusion of mind amongst writers on the subject of religion as to these instincts? Man has no instinct, surely, towards the objective, towards definite and complex ideas of the mind and the resulting acts. Whatever be the analogy, or want of analogy, between what has been called instinct in animals,—that which leads a bird to the complex act of building a certain kind of nest, or a bee to construct a definite form of cell,—and that which leads a man to construct the definite form, arising from a complex idea, of a chair or a steam-engine, it is certain that such ideas of man are not innate in any true sense, but are the result of powers of reason and memory, which alone are the innate. And yet we find some Christian apologists treating of the idea of a God, omnipotent, omniscient, omnipresent, the centre of justice, the Creator, the method of worship due to Him, and even the very complex idea of sacrifice, as though these were

instincts in man. Man must either have reasoned out the ideas of Deity, and the idea of worship due to Him, or these ideas must have been communicated. The mere study of man's nature would seem to lead to this conclusion.

The first alternative is that taken by Mr. Herbert Spencer and Mr. Frederic Harrison. According to them, man has reasoned out his religion, hitherto imperfectly, but yet progressively : according to one, reason will at last lead men, as it has already led himself, to the acknowledgment only of an unknown eternal energy, from which all things proceed, and far removed from any definite acts of worship, shorn of all anthropomorphic surroundings ; according to the other, man's reason will reduce his religion to the worship of humanity—whatever that may mean. Of course, these theories cannot both be true. The other alternative remains, which is that man is a religious being, because the ideas of religion have been communicated to him.

On this part of the question Mr. Eells's paper is very luminous and valuable. However much of the illustrations of belief in spirits or ghosts might be taken by Mr. Spencer as contributing to his view, there is one part of his theory on which Mr. Eells's evidence is silent, and that is as to the chronological sequence of ideas, which is a very vital part of Mr. Spencer's theory. There is no evidence to be obtained from these unwritten traditions as to which portion of belief has priority in point of time. There is no evidence that the *first* step in the religions of these Indian tribes was a "belief in a double belonging to each individual, which, capable of wandering away from him during life, becomes his ghost or spirit after death"; that "from this idea of a being eventually distinguished as supernatural there develop, in course of time, the ideas of supernatural beings of all orders up to the highest"; that from the fact of "social grades and rulers of different orders," among men, "there resulted that conception of a hierarchy of ghosts or gods which polytheism shows us"; and that, "with the growth of civilisation and knowledge, the minor supernatural agents became merged in the major supernatural agent, this single great supernatural agent gradually losing the anthropomorphic attributes at first ascribed."* The real value of Mr. Eells's investigation seems to lie in the remarkable parallelism, so far as traceable, between these *traditions* and the *written* records and monuments of other ancient peoples. The really scientific method of inquiry is to ask how the early history of other nations, who *have left records of very early times*, chronologises (if such a word be allowable) these beliefs. And such early records certainly indicate belief in one Deity, the Creator, &c., as preceding all other beliefs as to spirits, thus entirely reversing the chronology of Mr. Spencer's system. The evidence of these traditions, explained by the evidence of actual monuments and records in other parts of the world, is that religion is not the result either of instinct or reason,

* *Nineteenth Century*, Nov. 1884, p. 838.

but that, as Mr. Kells concludes, it was communicated to man. The one fact of the traditions as to a "flood" is, in itself alone, a wonderful example of how ancient history and beliefs live in their salient features even when literature and art have long been silent; for it is preposterous to suppose that every single tribe, ancient as well as modern, that retains that tradition retains merely a recollection of a local flood; there must, in that case, have been as many local floods, each producing the same results, as there have been and are tribes holding this particular tradition. And the grand tradition, traceable through Accadian, Assyrian, Persian, Egyptian, Hindu, Greek, Roman antiquities, and now through the traditions of the unlettered Indian tribes of America, that there is a "Supreme Being, immortal, invisible, omniscient, omnipresent, good, seeing our thoughts, and punishing evil," can only have grown from a knowledge among the early families of mankind, unquestionably by communication, of such a Being, and of the worship due to Him.—There is not a shred of historical evidence of Mr. Spencer's chronological sequences in man's reason; nor is there in man an instinct towards such results.

THE AUTHOR'S REPLY.

I CANNOT but feel grateful for the very kind reception which my paper has received from the members of this Institute. I know that Christians are sometimes accused of being prejudiced as they look at such subjects; still, where there is such a wide amount of evidence, it seems to me (though I may be mistaken) that we should not be treating Christianity aright were we to abandon all the arguments that such evidence affords us, simply because such accusations are sometimes made.

In regard to the remarks made on the sentence, "when and how they came hither, and whence they came, are questions not satisfactorily answered," I would say that the idea which I intended to convey, though I may have failed to do so, is that these questions have not been answered to the satisfaction of everybody. For myself I am satisfied thus far—that the ancestors of these natives came at different times and in different ways. I was first taught that they came from Asia, by way of Behring's Straits, and I think it likely that some did, as it is a very easy and natural route. Some probably drifted across in junks or boats of some kind. Since the Pacific

coast was settled, we know that a Chinese junk drifted to it in 1843, when three young men were saved, taken to England, educated, and sent back to China. There is no reason why we may not believe that other vessels may have also drifted at different times widely separated, and landed at different places.

It is an accepted fact also that previously to the discovery of America by Columbus, people from North-western Europe came to America by way of Greenland, and that some returned, and I see no reason why others may not have done so in pre-historic times. In this way it is very easy to account for the great variety of tribes and difference of traditions, languages, and customs.

The universality of the tradition about the flood inclines me to the opinion that they came after that event occurred. The dimness of the tradition about an Incarnation leads me to think that they knew only a little about that; perhaps from prophecy or hearsay, and that most, if not all, came before that event occurred.

I did not intend to convey the idea that no tribes offered sacrifices to Manitou. I simply spoke of their sacrificing to the Great Spirit. I am satisfied that they did offer sacrifices to the inferior deities and Manitous. They sacrificed to the being or beings whom they thought most likely to assist them, or whose anger they most feared.

As to the criticism of the Rev. T. Dunn about the Nass Indians carrying the images of their gods in a box, I accept the correction. I took the statement as given by J. Dunn, in his work on the Oregon Territory, but am satisfied, from the remarks of the Rev. T. Dunn, that it is a mistake. I cheerfully accept all such corrections.

REMARKS BY THE REV. J. OWEN DORSEY,

Late Missionary to the Ponka Indians, now of the Smithsonian Institution, Bureau of Ethnology and V.P. Section of Anthropology, A.A.A.S., 1885.

THE idea of a Supreme Being is said to have existed among the Omahas and cognate tribes prior to the coming of civilisation. The writer has heard this not only from the ex-chief, La Flèche, now a Christian, but also from men still holding their ancestral faith. Among these is one of the servants of the Elk gens, who assists that gens in the ceremonies pertaining to the worship of the thunder-god. "When there were no white people in this land, the ancestors of the Omahas and Ponkas believed that Wa-kan-da existed.* They did not know where he was, nor did they say how he

* Literally, Wakanda t'a'i tē e-dhe-ga"-i.

existed. . . . Some addressed the sun as Wakanda, though many did not. Some worshipped the thunder under this name." The name may be rendered "The Wonderful or Mysterious Power."

The servant of the Elk gens said that there were seven great deities, Darkness, the Sky, the Ground, Thunder, the Sun, the Moon, and the Morning Star. The principal deity is in the upper world, above everything. These seven were probably the objects worshipped by the men of his gens. He also said that Warmth was a good deity. Two Crows said that they appealed to a Wakanda below the ground (as well as to the Wakanda in the upper world), during the ordeal of the sacred bag and sticks.*

Page 298, lines 19-22. From what I have gained, I conclude that this is the correct view.

The Winnebagos tell of Ma-'u'-na, Earth Maker, who sat on a piece of ground just large enough to hold him, facing the east. "He faced the east because it is the source of all light and knowledge."

The Joshua Indians (Tche-me' tun-né', a Tinne tribe), formerly at the mouth of Rogue R., Oregon, tell of two Beings, one the superior Creator, who now is in the Sun, and the Father of Indians, who dwells at the south with the Mother. These never die. The Na'l-tun-ne' tun-né' (also Tinne), who were south of the Joshuas, tell of Kha'-wa-ne'-sha, who appears to have been the Creator of the Joshua tradition. This tradition (published in the *Detroit Free Press*) was obtained by the writer when in Oregon.

Among all the Siouan tribes, the term "Grandfather" is applied to supernatural beings, to whom they pray for help. The Dakotas, Omahas, Ponkas, &c., when they meet a large boulder on the prairie, present bundles of tobacco to it as a representative of the Earth-god, and address it as Grandfather, asking for success. This term is also applied to the President of the U.S., the Secretary of the Interior being the "Next Grandfather," and the Commissioner of Indian Affairs, the "Little Grandfather." The term has been mistranslated "Great Father."

Page 300. *Good Spirits*.—Among these are guardian spirits, appearing in visions and dreams, after fasting, including the Rattlesnake, Grizzly Bear, Black Bear, Buffalo, Big Wolf, and Prairie Wolf. Among the Ponkas and Omahas, when a youth changed his name, as he went to war, a crier was sent to the hills to announce the act to the various deities, including the hills, trees, birds, reptiles, insects, &c. The originals of these addresses, with translations, will appear in Vol. VI., Part I., *Contributions to N. A. Ethnology (The Dhegiha Language)*. By the writer).

Page 301. *Evil Spirits*.—Long was correct (*see* p. 303) in saying that the Omahas had no idea of a devil (before the coming of our race). But they did and do believe in evil spirits or demons. In 1871, the Ponkas explained their custom of giving away all their possessions on the death of a member of the

* See *Omaha Sociology*, § 214, on p. 328, in 3rd Annual Report, Bureau of Ethnology. *Omaha Sociology* (by the writer) was published in Dec., 1885.

household : There are bad spirits, who wish to harm us. They have caused the death of the person. Unless the members of the household make themselves poor (destitute of all things, and too miserable for the demons to notice), they will come again and kill another person. The Omahas give another explanation of the custom : (1) Objects needed by the deceased in the other world. (2) The survivors wish to see nothing belonging to the deceased. This refers to the property of the dead, however, not to other things given away. In some cases, presents were made to the survivors !

II. *Man as a Spiritual Being*.—This is the firm belief of all the tribes among whom I have lived. The Oregon Indians say that at death the released spirit returns to the Mother, who sends it back to inhabit the body of a new-born infant. Some Siouan tribes think a man has four souls (Mathews, *Ethn. Hidatsa*, 1877, p. 50). In the Omaha Black Shoulder gens, the dying person is thus addressed : "Your four souls are going to the animal gods, the four winds, and your ancestors ! Be strong !" Articles of food have been buried with other objects by Omahas, and have been placed by graves (by Omahas, Ponkas, &c.) for the ghosts to eat. Various articles have been seen by the writer by the graves of Oregon Indians. Horses have been strangled by the grave for the benefit of the deceased owner. When the Omaha head chief, Big Elk, was dying, he wished his successor to provide him with a retinue, telling him to give "medicine" to certain subordinate chiefs !

III. (a). See above. The Omahas have a myth of four creators, of which the writer has the original (unpublished). The Iowas tell of I-shchin-ke, son of Pi, the Sun, who was expelled from the upper world for gazing on his father's nakedness. On reaching this world, he was seated in a boat, as the earth was under water. He lowered a musk-rat into the water, and obtained mud from the bottom. A bird that he sent off returned with a branch in its beak. Stripping off the leaves, and breaking up the twigs, he mixed the pieces with the mud, which he scattered over the water, causing the land to appear. Then he made all the animals. In the tradition of the Osage secret order, they tell of a flood, a dove, &c.

Page 314. *Thanksgiving*.—For the thanksgiving ceremonies of the Omahas after a buffalo hunt, see *Omaha Sociology*, pp. 293-299.

Page 315. *Prayer*.—Omahas and Ponkas invoke a higher Power before undertaking a journey, hunting expedition, &c. For minor actions, as trapping or fishing, when going but a short distance from home, it is unnecessary. At a feast, food and drink are poured on the ground, after turning to the four winds. The use of the pipe is connected with prayer, as its smoke ascends on high and is pleasant to Wakanda.

Prayer is offered when the objects are gathered for the sweat-lodge. (See p. 242, Part I., Vol. VI., *Contributions to N. A. Ethn.*, where it is given in full.) See "Kansas Mourning and War Customs," pp. 674, 676, 678, in *American Naturalist*, July, 1885.

Page 316. *Sacrifices*.—The Sun-dance among the Ponkas is borrowed

from the Dakotas. The Omahas do not have it. In the Sun-dance, the Ponkas "punish themselves with reference to Wakanda." See above for sacrifices to the Earth-god.

Page 318. *Other Forms of Worship*.—Circumcision and baptism have not been found by the writer, though ceremonies resembling those of baptism have been observed by Omahas, Ponkas, Osages, &c., on the fifth day after the birth of a child, and on the reception of a female into the secret society. I refer to the naming of the child in the presence of all the members of the gens, food mixed with the saliva of the officiating man and placed between the lips of the infant, the address to the infant (telling it the objects which it must not eat or touch during life), and the rubbing of the female from head to foot when pronouncing the Sacred Name three times (four times three times in all). See *Omaha Sociology*, p. 245.*

Some of the dancing societies of the Omahas, &c., were evidently of a religious nature. See *Omaha Sociology*, pp. 342-355.

IV. *Man's future Abode* (p. 319).—The Omahas have a very crude belief. They are told by the aged men, "If you are good, you will go to the good ghosts (or spirits). If you are bad, you will go to the bad ghosts." Nothing was said in former times about going to dwell with Wakanda, or with the demons. There was no belief in a resurrection of the body, but simply in the continued existence of the ghost or spirit. While some of the Iowas have expressed a belief in the transmigration of souls, such a doctrine has not been found among the Omahas and Ponkas.

End of the World (p. 321).—Nothing gained on this point.

* *The American Antiquarian and Oriental Journal* (Vol. V., No. 3) for July, 1883, contains my article on "The Religion of the Omahas and Ponkas," pp. 271-275. "Osage War Customs" can be found in the *American Naturalist* for February, 1884.

NOTE.

ON COMPARATIVE RELIGIONS.

THE following remarks upon Comparative Religions* may not be out of place as the subject is touched upon in more than one paper in the present volume :—

“Some time since, Principal Fairbairn, an acknowledged authority in Comparative Religions, gave a series of lectures in Andover, Massachusetts, which were briefly reported in a contemporary as follows :—

The course comprised eleven lectures. The first two discussed fundamentals. Then came one on the religions of China ; seven on the religions of India ; one on Mohammedanism. These were selected as most important from the missionary standpoint, and as furnishing the best exemplifications of the natural history of religions. Only a brief review is here given.

Religion is universal. No lowest tribe is without it. On this ethnologists are practically agreed. This thought is fundamental.

The theme was then thrown into three divisions : (1.) The Philosophy of Religion ; (2.) The History of Religions ; (3.) The Philosophy of Religions. Under the first were considered the origin, nature, and function or end of religion. The formula was given and illustrated : “As a man conceives the origin of knowledge, so he conceives the origin of religion ; as a man conceives the origin of religion, so he conceives its purpose and its value at any time.” Materialism has never produced a transcendental theory of religion. Many spiritual theories have fallen short of truth. Religion is not thought, nor feeling, nor will, but all ; it is the highest unity of man’s nature.

The lecturer divides religions into spontaneous and instituted ; those growing by unconscious processes out of the instincts of the people, and those that run back to a great personality. All religions must be studied under historic conditions and with reference to underlying causes. Man is one factor, his environment another. For such study, a scientific spirit is indispensable, as also spiritual reverence.

In discussing the religions of China, the lecturer referred to the great age of the Chinese empire. “When Rome was young, China was old.” Its civilisation is purely indigenous ; so are its great religions. These are two,

* From an ably conducted American Review.

Confucianism and Taoism. Behind each is a great personality, giving it character. Confucius was a conservative, reverent for the past, a reformer and transmitter. Lao-Tse was an independent, radical thinker, seeking ultimate truth ; a revolutioniser, discoverer, creator. They were contemporaries ; Lao-Tse being born 604 B.C., Confucius, 551 B.C. Confucius changed the religion he transmitted, became the incarnation of its spirit, and finally its deity. He was practical and ethical. Lao-Tse was greater in thought, taught a deeper and truer religion, but too speculative to succeed. His religion has been eclipsed by Confucianism. The Chinese conceive God as impersonal, the king as ruler by divine appointment. The most distinctive feature of their faith is ancestor-worship.

The lecturer did his best work on the religions of India. His review covered seven lectures, each more than an hour long. The four great religions of India are : (1) Vedic religion ; (2) Brahminism ; (3) Buddhism ; (4) Reformed Brahminism, or Hinduism. The first is contained in the Rig-Veda, the oldest Aryan literature, probably belonging to the seventeenth century before our era. The religion of this period is a religion of nature ; bright, full of vigour and beauty. Its gods are the powers of nature. As the period advances, there is a gradual growth of the speculative spirit, resulting in agnosticism.

Here Brahminism begins. It marks a change in the Hindu spirit. Spontaneity is gone ; formalism has come. The language of the sacred books is dead ; priests are their interpreters. Through them alone is access to the gods. The gods are reached through sacrifice ; only the priests can offer it. Thus arises the sacerdotal idea, making the priesthood an absolute power. Gods and men are separated by the priests, and through them alone can unite. The speculation which began in the early period grows and ripens in Brahminism. In answer to the question as to what is ultimate being, its relation to the world and to man, Brahminism says that Brahma is all in all. From him, by evolution and emanation, all comes ; unto him all returns. He only is permanent. In Brahminism, individual souls are like the 'atoms' of modern physicists—ever varying forms of the one substance. To be swallowed up in Brahma is supreme bliss. This is gained by knowledge. Who knows the supreme spirit becomes spirit. Brahminism created the caste system, with the absolute sovereignty of the priesthood. The religion had no ethical quality ; it was purely metaphysical.

Buddhism was the child and supplanter of Brahminism—a revolt from the system of priestly sacrifice. It is an ethical religion. Its metaphysics are akin to the pessimism of Schopenhauer. Buddhism owes everything to Buddha. He lived toward the close of the sixth century B.C. He was thoughtful, noble, pure ; his soul was burdened for men ; he found no satisfaction in the sacrificial system ; he aspired to know the ultimate truth. How his speculation, having for its motive the good of his fellowmen, resulted in the gloomiest, most hopeless pessimism, is a most interesting study. It cannot be entered into here. Under his circumstances his conclusion was

the only one. Given a universe, with evil, but without God, and pessimism is the most rational philosophy. Accept Buddha's premises and his pessimism is only the decision of an honest mind.

The four great truths are: (1.) Sorrow is; (2.) The cause of sorrow is the desire of being; (3) the cure of sorrow is the suppression of desire; (4) knowledge alone gives deliverance. The great blessing is to escape from being. Merit and demerit are alike bad, for both make existence necessary. To escape from the wheel of being, to find quiet and unconscious repose in Nirvana, was the aim of life; this was salvation—being without the desire to be. It is remarkable that on such a metaphysical basis Buddha should have erected so pure an ethical system. There is in it much to admire. To reach Nirvana it was necessary to be right in belief, heart, speech, action, profession, spirit, memory, and meditation—a very complete and noble moral code. The ethics of the system are those of Buddha; when he was gone they declined. And the religion he founded, though ethically far purer, was organically weaker than the older Brahminism, and succumbed to it. Out of the Union arose the present religion of India—Hinduism.

Hinduism is a perfect Pantheon. It has an infinity of gods, and power for any number more; it readily deifies men. Its principal deities are Brahma, Vishnu, and Siva. The female deities are especially worshipped. Hinduism is of all systems the hardest to conquer, for it gathers in and sanctifies the darkest in man.'

The Reviewer remarks as follows:—

"Imperfect, as this report manifestly is, it demonstrates much study and a worthy grasp of the subjects discussed. And yet there are not a few points on which we would thank the learned lecturer for more definite and explicit utterances.

1. Of the *Aryan sacrifices* he tells us: 'The gods are reached through sacrifice; only the priest can offer it Gods and men are separated by the priests, and through them alone can unite.'

Whence the origin of this Aryan idea and usage in regard to sacrifices? and wherein did the Aryan sacrifices differ, in theory and practice, from the ancient Jewish sacrifices enjoined in the Mosaic Code?

2. Of *Brahminism* Dr. Fairbairn says: 'It teaches that Brahma is all in all. From him by evolution and emanation, all comes; unto him all returns. He only is permanent To be swallowed up in Brahma is supreme bliss.'

The Bible teaches that 'Christ is all and in all,' Col. iii. 11; that He 'fillet all in all,' Eph. i. 23. 'For of Him, and through Him, and to Him, are all things,' Rom. xi. 36. 'All things were made by Him; and without Him was not anything made that was made,' John i. 3. 'That they may be one,

even as we are one. I in them and Thou in Me, that they may be made perfect in one,' John xvii. 22, 23. Wherein do these teachings of Brahminism and the Christian Scriptures differ except in the name God in place of Brahma? Is it proper to say such teachings have 'no ethical quality'?

3. What is the essential difference between the Brahminic idea 'swallowed up in Brahma,' as Dr. Fairbairn expresses it, and the Buddhistic idea of 'escape from the wheel of being to find quiet and unconscious repose in Nirvana'? And what the essential difference between both these and the Christian doctrine of the believer's absolute oneness with God?

4. Did *Nirvana*, in the mind and teaching of Buddha, mean 'escape from being,'—absolute annihilation? Did it not rather mean, escape from human passions and elements which involve evil, sorrow, and suffering?

5. Did Buddha teach *blank Atheism*? Our lecturer is made to say: 'Given a universe, with evil, but without God, and pessimism is the most rational philosophy.' If Buddhism teaches absolute atheism, then why the thousands of Buddhist temples for worship, and the daily and hourly prayers of Buddhists from the days of Sakyamuni to the present time? To whom do they pray?

Will some of our philosophers, so conversant with the inherent elements, motives, and forces of ancient and Oriental religions, give us in their next lectures a little more distinct and definite utterances on these and other similar points which are ever cropping up in the study of comparative religions?"

REMARKS upon the Foregoing by the Rev. R. Collins, M.A. (late Principal of Cottayam College):—

"Comparative religion is pre-eminently an historical study; and the further we go back in actual history, the more distinctly do we see the fundamentals of religion, not developing, but unveiled.

Buddhism is, I think, misunderstood in a great measure by Professor Fairbairn. It is difficult in the extreme to derive the exquisite morality of Buddhism from '*Blank Atheism*.' The fruits of '*Blank Atheism*' would surely have had a different character. There is no valid evidence that the Buddhist Nirvana was originally 'annihilation.' The '*Samyutta Nikāya*' indicates the exact contrary. The morality of Buddha was already in the world. He revived the ethical aspect of religion, which had dropped out of Brahminism, and he despised the rites of the Brahmins, because they had lost their meaning. Buddha was a '*Koheleth*': and he might well have

ranked, in this aspect, with Shakspeare, Tennyson, and Omar Khayyam, in Dean Plumtre's Appendix to his Commentary on 'Ecclesiastes.' But beyond this Buddhism gives us only partial help in the study of the origin of religions, because it perpetuates only one aspect of religion. I mean the ethical, which, moreover, it has confused and overlaid with Hindu metaphysics. Buddhism is only a religion in the same sense in which some modern sect might form a religion, if we could call it so, by taking the Book of Ecclesiastes out of the Bible, entirely ignoring the rest of its books, and framing upon that book alone a system embracing whatever the imagination might conceive as possibly agreeable to it.

Is not a profounder comparative study of religions, through history, teaching us that the earliest known families of mankind worshipped one God, the Infinite, the Creator, the Light of the world, the Self-existent (see Canon Cook, on 'Ahura,' *Zend*; 'Asura,' *Sanscrit*)* : and that they had a religious worship and sentiments, the vestiges of which are still scattered among the nations ; but that no nation has ever been seen to raise itself in the religious scale ?"

* *Origins of Religion and Language*, by Canon Cook.

ERRATA.

Page 50, note, for "Name of God in the lesson books" read "Word of in God the lesson hours."

. In Australia it is anxiously desired that the Colonial Government should permit the same liberty for the Bible in schools as is found under the London School Board system.

Page 130, line 28, for "Charles" read "St. Chad."

Page 143, line 20, for "Charles" read "James."



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VICE-PATRONS, MEMBERS, ASSOCIATES,
&c.**

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1869. ¶ M'Cann, Rev. J. D.D. F.R.S.L. F.G.S. 25, *Endlesham Road, Balham, S.E.*
1878. McCormick, Rev. Canon J. F. D.D. R.D. *Rectory, Geashill, King's County, Ireland.*
1880. McDonald, J. E. Esq. 4, *Chapel Street, Cripplegate, E.C.; Stafford House, Grove Park, Lee.*
1879. McDonald, Ven. R. Archdn. of Mackenzie, Dio. Athabasca, Sch. and Hon. Fell. St. John's Coll. Manitoba, *Fort Macpherson, Mackenzie Dist. N.W.A. Canada.*
1885. Marshall, Rev. C. J. *Bengeo, Hertford.*
1872. Matthews, John T. Esq. 72, *Cornhill, E.C.*
1868. Mewburn, William, Esq. *Wykham Park, Banbury.*
1872. Mewburn, William, Esq. jun. 13, *Pall Mall, Manchester; Broomleigh, Bowdon, Cheshire.*
- ✠ Monckton, Col. the Hon. H. M. *Crowthorne, Wokingham.*
1875. Moon, R. Esq. M.A. Cantab. Barrister-at-Law, Hon. Fellow Queen's Coll. Camb. 45, *Cleveland Square, Hyde Park, W.; 6, New Square, Lincoln's Inn, W.C.*
1875. † Moore, Joseph, Esq. *The Mount, Sevenoaks.*
1877. Morgan, R. C. Esq. 12, *Paternoster Buildings, E.C.*
1867. † MORLEY, SAMUEL, Esq. M.P. *Hall Place, Tunbridge; 34, Grosvenor Street, W. (VICE-PATRON).*
- ✠ ¶ Morshead, Edward J. Esq. H.M. Civ. Serv. *War Office; Winchester House, St. James' Square. (HON. FOREIGN SECRETARY).*
1881. † Mullens, Josiah, Esq. F.R.G.S. 34, *Hunter Street, Sydney, New South Wales; or 92, Pitt Street.*
1886. Murray, The Right Hon. Sir C. K.C.B. M.A. Privy Councillor, *The Grange, Old Windsor; Villa Victoria, Cannes, France.*

N.

1880. *Napier, James S. Esq. 9, *Woodside Place, Glasgow*.
 J Napier, John, Esq. 23, *Portman Square, W.*
 1878. NELSON, THE RIGHT HON. THE EARL, *Trafalgar, Salisbury*.
 1874. NELSON, THE RIGHT REV. ARTHUR BURN SUTER, D.D.
 LORD BISHOP OF, *Nelson, New Zealand* (63, *Russell Square, W.C.* for corresp.).
 1881. Newth, F. Esq. *Oakfield, Lynnsdown, New Barnet, N.*
 J *Newton, A. V. Esq. *Cleveland Villa, The Glebe, Lee, S.E.*
 1881. Newton, Rev. Preb. H. M.A. Camb. *Driffield, East Yorks.*
 J Niven, Rev. W. B.D. 5, *Walton Place, Chelsea, S.W.*
 1886. Northcote, Stafford C. Esq. *Devon House, Balham, S.W.*
 1877. Nunn, E. Smith, Esq. M.A. LL.D. Grad. in Honours,
T.C.D., The College, Weston-super-Mare.

O.

1872. Ogle, W. Esq. M.D. *The Elms, Derby*.
 1872. Oldroyd, Mark, Esq. jun. *Hyrstlands, Devesbury*.

P.

1885. Pain, R. Tucker, Esq. Memb. Graphic Soc. Memb. Art
 and Amateurs' Soc. *Glenside, Woburn Sands, Woburn,*
or Rumleigh, near Tavistock.
 1881. Patton, Rev. F. L. D.D. LL.D. Prof. Relations of Philosophy
 and Science to the Christian Religion, *Princeton*
Theological Seminary, Princeton, New Jersey, U.S.A.
 1885. †Paynter, Rev. F. M.A. Camb. *Stoke Hill, Guildford*.
 1877. †Paynter, Rev. S. M.A. 13, *Bolton Street, Piccadilly, W.*
 1877. Pearce, W. Esq. *Chemical Works, Bow Common, E.*
 J †PEEK, SIR HENRY WILLIAM, BART. M.P. J.P. for Surrey,
Wimbledon House, S.W. (VICE-PATRON).
 1880. *Peek, W. Esq. *Shelton, Sydenham Hill, S.E.*
 1885. Pember, G. H. Esq. *Westbourne, Budleigh Salterton,*
Devon.
 1873. Peters, Rev. T. Abbott, M.A. *St. John's Hall, Grimsargh,*
near Preston, Lancashire.
 J *Petrie, Captain Francis W. H. (late 11th—The Devon-
 shire—Regt.), F.G.S. Hon. Cor. Mem. Anthropol. Soc.
 N.Y. Memb. Council Ch. Def. Inst. 12, *Gloucester*
Walk, Kensington, W. (HON. SEC. and ED.), *f.c.*

1871. Phayre, Rev. R. M.A. T.C.D. *West Raynham Rectory, Brandon (Loc. Hon. Sec.)*.
 1872. ¶Phené, J. S. Esq. LL.D. F.S.A. F.G.S. F.R.G.S. 32, *Oakley Street, Chelsea, S.W.*
 1885. Phillimore, Rear Admiral H. B. C.B. R.N. *Stoneleigh, Lansdown, Bath.*
 1878. Pope, Rev. W. B. D.D. Ex-Pres. Wes. Conf. Theological Tutor, *Didsbury College, Manchester.*
 1882. †Pogson, Miss E. Isis ; F. M. S. Meteorological Reporter and Assist.-Govt. Astronomer, *Meteor. Office, Madras.*

R.

1873. ¶Radcliffe, C. B. Esq. M.D. 25, *Cavendish Square, W.*
 1884. Ramsay, Rev. J. S. Presb. Ch. Madison Avenue, 125 *Street, New York, U.S.A.*
 1880. Redpath, Peter, Esq. *The Manor House, Chislehurst ; 3, Temple Gardens, E.C.*
 1877. Reith, Archibald, Esq. M.D. M.R.C.S. 39, *Union Place, Aberdeen.*
 1882. Reynolds, Rev. J. W. M.A. Preb. St. Paul's, Aldersgate, 205, *Church St. Stoke Newington, N.*
 1878. Rhodes, Lt.-Colonel G. *Westhaugh, Pontefract, Yorks ; Rothay Holme, Ambleside.*
 ¶ ¶*Rigg, Rev. J. H. D.D. Principal of the Wesleyan Training College, 130, *Horseferry Road, Westminster, S.W.*
 1873. Ripley, Rev. W. N. M.A. *Earlham Hall, Norwich.*
 1880. Rivington, Rev. Cecil S. M.A. *Panch Howd Mission House, Poona, Bombay.*
 ¶ Robertson, Peter, Esq. H. M. Civ. Serv. *Neworth Kelso, N.B.*
 1880. Rossiter, J. A. Esq. *Oliphant House, Newera Elliya, Ceylon.*
 1867. ¶*Row, Rev. C. A. M.A. Oxon. Prebendary of St. Paul's, 22, *Harley Road, South Hampstead, N.W.*
 1872. Rowe, Rev. G. Stringer, *Selborne Villa, Blackhall Road, Oxford.*
 1872. Rowe, H. M. Esq. 34, *Wellje Road, Hammersmith, W.*
 1884. Ruscoe, J. Esq. F.G.S F.R.G.S. Memb. Soc. Arts, *Prospect House, Hyde, near Manchester.*
 1868. RUTLAND, HIS GRACE THE DUKE OF, K.G. Lord-Lieutenant of Leicestershire, &c. &c. *Belvoir Castle, Grantham ; Cheveley Park, Newmarket ; Bute House, Camden Hill, Kensington, W.*
 1881. †Ryder, The Hon. H. D. 27, *Queen's Gate Gardens, S.W.*

S.

1880. Salisbury, J. H. Esq. M.A. M.D. B.N.S. Cor. Memb. Nat. Hist. Soc. Montreal; Memb. Amer. Antiq. Soc.; Memb. Amer. Assoc. Adv. Sci.; 9, *West 29th St., New York.*
1881. Sanderson, H. J. Esq. Phys. M.D. St. And. M.R.C.P.L. 26, *Upper Berkeley Street, Portman Square, W.*
1884. †Saunders, H. C. Esq. Q.C. M.A. Ch.Ch. Oxon. 3, *Bolton Gardens, S.W.*
- ♣ Scales, George J. Esq. *Belvoir House, Hornsey Lane, N.*
1875. Schreiner, F. Esq. *New College, Eastbourne.*
1882. Scott, John H. F. Kinnaid, Esq., *Gala House, Gala-shiels, N.B.*
1882. †Scott-Blacklaw, Alex. Esq. *Clifton Cottage, Dollar, Clack-mannanshire*; c/o New London and Brazilian Bank, *Rio di Janeiro, Brazil.*
- ♣ Selwyn, Vice-Ad. Jasper H. R.N. 16, *Gloucester Crescent, Hyde Park, W.*
1873. Sexton, Rev. G. M.A. D.D. Ph.D. F.R.G.S. F.Z.S. F.A.S. 67, *Arlingford Road, Tulse Hill, S.W.*
- ♣ *†SHAFTESBURY, THE RT. HON. THE EARL OF, K.G.
- ♣ Shaw, E. R. Esq. B.A. *Springfield, Roupell Park, S.W.*
1871. †Sheppard, Rev. H. W. M.A. *Rectory, Emsworth, Hants.*
1885. Sherard, Rev. C. E. 22, *London Road, Braintree.*
- ♣ Shields, John, Esq. *Western Lodge, Durham.*
1876. Sime, James, Esq. M.A. F.R.S.E. *Southpark, Fountain-hall Road, Edinburgh.*
1877. Smith, C. Esq. M.R.I.A. F.G.S. Assoc. Inst. C.E. *Barrow-in-Furness*; *Kirklands, Ulverston, Lancashire.*
1885. †Smith, the Hon. Donald A. 22, *St. Alexis Street, Montreal, Canada.*
1873. Smith, Philip Vernon, Esq. M.A. 4, *Stone Buildings, Lincoln's Inn, W.C.*
- ♣ †Smith, Protheroe, Esq. M.D. M.R.I. 42, *Park Street Grosvenor Square, W.*
1869. Smith, The Very Rev. R. Payne, D.D. Dean of Canterbury, *The Deanery, Canterbury.*
1873. Smith, Samuel, Esq. M.P. 4, *Chapel Street, Liverpool*; 7, *Delahay Street, S.W.*
1879. Smith, Samuel, Esq. M.R.C.S.E. L.S.A. F.A.S. M.S.A. F.S.Sc.Lond.; Ratcliffe Prize Essayist (Qu. Coll. Birm.); late Govt. Emig. Surg. Superint.; Surgeon-Major 1st Cons. Batt. G.E.V.; Memb. Bristol Bot. Micros. and Nat. Soc. &c. *Wyndham House, Kings-down Parade, Bristol.*

- †Smith, W. Castle, Esq. F.R.G.S. M.R.I. 1, *Gloucester Terrace, Regent's Park, N.W.*
 1870. Smith, Rev. William Saumarez, B.D. Cantab. Fellow of Trin. Coll. Camb. Hon. Canon of Chester, Principal of *St. Aidan's Theological College, Birkenhead.*
 1883. Sparrow, Rev. W. C. LL.D. Dub. M.A. Oxf. Min. St. Leonards, Headmaster, *The Grammar School, Ludlow.*
 1884. Spottiswoode, G. A. Esq. 3, *Cadogan Square, S.W.*
 †Stalkartt, J. Esq. *Hops Town, Sonada, Darjeeling, India.*
 1882. Stevenson, J. Esq. M.B. Glasg. F.R.C.S.E. Surg. Army Med. Staff. Ramleh, *care of Principal Medical Officer, Egypt.*
 1876. Steuart, D. V. Esq. *Albert Chemical Works, Clayton, Manchester.*
 1875. ¶Stewart, Rev. Alex. M.D. LL.D. *Heathcot, near Aberdeen.*
 1871. Stewart-Savile, Rev. F. A. M.A. Trin. Coll. Camb. J.P. *Leybourns Grange, Malling, Kent.*
 1879. Stokes, Rev. A. M.A. Camb. Head Master of Mussoorie School, *Mussoorie, N.W.P. India.*
 1880. Stokes, Rev. H. Pelham, M.A. Oxon. *Rectory, Wareham.*
 †Sutherland, The Hon. P. C. M.D. M.R.C.S. Edin. F.R.G.S. Surv.-Gen. *Pietermaritzburg, Natal.*

T.

1881. Taylor, Rev. R. *St. Stephens, Newtown, Sydney, N.S.W.*
 1876. Thomson, Rev. A. D.D. F.R.S.E. 63, *Northumberland Street, Edinburgh.*
 † ¶Thornton, Rev. Robinson, D.D. Oxon. *St. John's Vicarage, Kensington Park, W. (VICE-PRESIDENT).*
 1882. Thursby-Pelham, Rev. A. M.A. Oxon. R.D. *Cound Rectory, Shrewsbury.*
 1867. ¶TITCOMB, THE RIGHT REV. BISHOP J. H. D.D. 12, *Holland Park Gardens, Notting Hill, W.*
 1872. Townend, A. P. Esq. *Chipstead House, Chislehurst.*
 1872. Townend, Thomas, Esq., jun. *Glenrose, Chislehurst, Kent.*
 1871. *Tremlett, Rev. F. W. D.C.L. Hon. Ph.D. Jena Univ. F.R.G.S. Chaplain to Lord Waterpark, Eccles. Com. for American Prelates and the Univ. of the South, Vicar of St. Peter's, *The Parsonage, Belsize Pk. N.W.*
 1875. Tristram, Rev. H. B. LL.D. F.R.S. F.L.S. M.Z.S. Canon of Durham, *The College, Durham.*
 1884. Trulock-Hankin, H. A. Esq. Downing Coll. Camb. K 3, *Albany, Piccadilly, W.*

1881. Trumbull, Rev. H. Clay, M.A. Yale, D.D. of Lafayette and N.Y. 4103, *Walnut Street, Philadelphia, U.S.A.*
 1883. Turton, W. H. Lt. R. E. (care of *Mrs. Hughes, Priory House, Monmouth, St. Helena.*)
 1883. Tyson, Rev. W. Wes. Min. *Wesleyan Manse, Belize, British Honduras.*

U.

1885. Usher, J. F. Esq. M.D. L.A.H. Dub. Life Gov. and Hon. Phys. *Hospital, Ballarat, Victoria, Australia.*
 1880. Usherwood, The Ven. T. E. M.A. Archdeacon of Maritzburg, *Maritzburg, Natal, South Africa* (c/o C. W. Troughton, Esq. 121, *Bishopsgate Street, E.C.*)

V.

- ƒ Vanner, J. E. Esq. *Camden Wood, Chislehurst, Kent.*
 1867. Vanner, John, Esq. *Banbury.*
 ƒ *Vanner, William, Esq. F.R.M.S. *Camden Wood, Chislehurst, Kent, f.c.*
 1880. Vaughan, Rev. David James, M.A. form. Fell. Trin. Coll. Camb. Hon. Canon of Peterborough, *St. Martin's Vicarage, Leicester.*
 1875. †Veasey, H. Esq. F.R.C.S. *Aspley Guise, Woburn.*

W.

1876. ¶*Wace, Rev. Prebendary H. D.D. Hon. Chap. to the Queen; Chap. to ABp. Canterbury; Preb. St. Paul's; Preacher of Lincoln's Inn; Principal of King's College, Lond. *King's College, Strand, W.C.*
 ƒ *Waddy, Samuel Danks, Esq. B.A. Q.C. M.P. Barrister-at-Law, 5, *Paper Buildings, Temple, E.C.*
 1884. Walker, P. B. Esq. Asst. Sup. of Telegraphs; Memb. R.I. Soc.; Memb. Geog. Soc., *Ellerslie, Darlinghurst, Sydney, N.S.W.*
 1885. Walker, Rev. F. A. D.D. F.L.S. 33, *Bassett Road, Notting Hill, W.*
 1871. †Walter, John, Esq. M.P. 40, *Upper Grosvenor Street, W.; Bearwood, Berkshire.*
 1873. Walters, W. M. Esq. 9, *New Square, Lincoln's Inn, W.C.*
 ƒ Ware, W. Dyer-, Esq. *Redland Hill House, Clifton.*

1880. Watkins, Rev. H. G. M.A. *St. John's Vicarage, Potter's Bar, Barnet.*
1878. Watson, A. Duff, Esq. M.A. *Park Lodge, Wimbledon Common, S.W.*; 18, *East Maitland Street, Edinburgh* (or Watson & Co. 34, *Fenchurch St. E.C.*)
1877. Watson, W. Livingstone, Esq. 34, *Leadenhall Street, E.C.*
1871. ¶*Weldon, Rev. G. W. M.A. M.B. *Vicarage, Bickley, Kent.*
1881. Wells, Rev. E. B.A. Exeter, Oxon. (address wanted).
- ✠ *West, W. N., Esq. F.R.G.S. 30, *Montague Street, Russell Square, W.C.* (HONORARY TREASURER), *f.c.*
1881. White, F. A. Esq. 2, *Lime St. Square, E.C.*
1881. Whiting, Rev. J. B. M.A. Camb. Chaplain to the Thanet Union, *St. Luke's Vicarage, Ramsgate.*
1883. Wilkinson, C. S. Esq. F.L.S. F.G.S. Govt. Geologist in charge of Mines. *Dept. of Mines, Sydney, N.S.W.*
- ✠ Whitwell, E. Esq. *Fairfield, Kendal, Westmoreland.*
1878. †Wigram, Rev. F. E. M.A. D.C.L. (Trin. Coll. Camb.), Sec. C.M.S. *Oak Hill House, Hampstead, N.W.*
- ✠ Williams, George, Esq. 13, *Russell Square, W.C.*
- ✠ *†Woodhouse, Alfred J. Esq. L.D.S. M.R.I. F.R.M.S. 1, *Hanover Square, W.*
1877. Woodward, T. B. Esq. *Hardwick Bank, near Tewkesbury.*
1882. Worden, Rev. J. A. D.D. Sec. Sab. Sch. Work, *Princeton, New Jersey, U.S.A.*
1873. Wright, F. Esq. 79, *High Street, Kensington, S.W.*
- ✠ Wright, Francis Beresford, Esq. M.A. Cantab. J.P. F.R.H.S. *Wootton Court, Warwick.*
- ✠ †Wright, J. Hornsby, Esq. 3, *Abbey Rd., Maida Hill, N.W.*
1884. Wylie, Alex. Esq. *Cordale Ho. Renton, Dumbartonshire.*
- ✠ Wyman, E. F. Esq. 75, *Great Queen Street, Lincoln's Inn Fields, W.C.*

Y.

1871. Yeates, A. G. Esq. *Collinson House, Effra Road, Brixton, S.W.*
- ✠ Young, Rev. Charles, M.A. Cantab. *Vicarage, Chewton Mendip, Bath.*

ASSOCIATES.

1881. Abbe, Professor Cleveland, M.A. Assistant in the office of the Chief Signal Officer of the Weather Bureau (late Director of the Observatory, Cincinnati), *Army Signal Office, Washington, D.C. United States.*
1872. ABRAHAM, THE RT. REV. BISHOP, D.D. Coad. to the Bishop, and Preb. of Lichfield, *The Close, Lichfield.*
- ✠ Adam, Rev. Stephen C. M.A. Cantab. *St. Jude's Vicarage, Newbridge Crescent, Wolverhampton.*
1878. Adams, Rev. Jas. *Rectory, Kill. Straffan, Co. Kildare.*
1884. Allan, H. E. A. Esq. *Darlinghurst, Sydney, N.S.W.*
1880. Allen, Rev. Beville, 83, *Iverson Road, Kilburn, N.W.*
1871. Allen, J. Esq. 117, *Long Acre, W.C. ; Villiers Road, Willesden Green, N.W.* (HON. AUDITOR.)
1886. Allnutt, Rev. S. S. M.A. Camb. *Cambridge Mission, Delhi, India* (Books to Dickeson).
1883. Anderson, Jas. F. F.R.G.S. ; Hon. Sec. Relig. Tract Soc. and Y.M.C.A. ; Ast. Sec. Ill. Soc. Arts and Sci. *Bel-air Grande Savanne or Melrose, Curepipe, Mauritius.*
1883. Anderson, J. Maitland, Esq. Librarian, *St. Andrew's University, N.B.*
1883. Archdall, Rev. Mervyn, M.A. Camb. *St. Mary's Parsonage, Balmain, Sydney, N.S.W.*
1873. Argles, Rev. Marsham, M.A. Oxon. Canon Residentiary of Peterborough, Proctor in Convocation, R.D. Diocesan Inspector of Schools, *Barnack Rectory, Stamford.*
1884. Armour, Rev. S. C. M.A. Head Master Merchant Taylors' School, *Great Crosby, Liverpool.*
1884. Armstrong, A. Campbell, Esq. jun. (care of A. C. Armstrong & Son), 714, *Broadway, New York.*
1879. Arnold, A. J. Esq. 7, *Adam Street, Strand, W.C.*
1878. AUCKLAND, THE RIGHT REV. W. G. BISHOP OF, D.D. *Bishop's Court, Auckland, New Zealand.*
1880. ¶ Avery, Prof. J. *Bowdoin Coll. Brunswick, Maine, U.S.A.*
1886. Aylmer, M.-General H. *Pendower, Falmouth.*
1884. Bartlett, S. C. LL.D. President Dartmouth Coll. *Hanover, New Hampshire, U.S.A.*

1876. Badger, Rev. W. C. M.A. Cantab. Minister of St. John's, Deritend, *Custard House, Yardley Rd. Birmingham.*
1872. Bailey, Rev. H. R. M.A. late Fell. and Tutor, St. John's Coll. Camb. *Rectory, Great Warley, Brentwood.*
1883. Bailey, Rev. J. 54, *Albert Terrace Road, Sheffield.*
1871. Baker, Rev. W. M.A. *Crambe Vicarage, near York.*
1882. Ballard, Rev. F. Wes. Min. M.A. Lond. F.G.S. *Kirkdale, Liverpool.*
1885. Banyard, G. D. Esq. *Dilkoosha, Enfield, N.*
1835. Barclay, C. A. Esq. F.R.G.S. 43, *Augusta Gardens, Folkestone.*
1874. ¶Bardsley, The Venerable J. W. M.A. Archdeacon of Warrington, Rector of St. Saviour's, 4, *Prince's Gate West, Liverpool.*
1882. †Baring, Rev. F. H. M.A. *The Shrubbery, Clapham Common, S.W.*
1882. Barker, Lady Katherine Raymond, *Fairford Park, Fairford, Gloucestershire.*
1852. Barker, Francis Lindsay, Esq. *Station Agent, Chiltern; Hanover Road, South Kingston, Sydney, N.S.W.*
1879. Barker, Henry, Esq. *West Mount, Huddersfield.*
1879. *Barkly, Sir H. G.C.M.G. K.C.B. F.R.S. 1, *Bina Gardens, South Kensington, S.W.*
1884. Barkworth, Thos. Esq. *West Hatch, Chigwell, Essex.*
1835. Barlow, Rev. W. C. M.A. *County Grove, Camberwell, S.E.*
1875. Barrett, Rev. E. J. (Wes. Min.), *Anns Shaw, Middledrift, via King William's Town, South Africa.*
1883. BATHURST, RIGHT REV. S. E. MARSDEN, D.D. Lord Bishop of, *Bathurst, New South Wales; 4, Oakfield Road, Clifton, Bristol.*
1884. Beach, Rev. D. N. Min. Cong. Chap. *Wakefield, Mass. U.S.*
1884. Beamish, Ven. Adn. (of Warranambool) P. Teulon LL.D. D.D. *Parsonage Warranambool, Victoria.*
1883. Beales, Miss, *Osborne Ho. Bolton Gardens South, S.W.*
1882. Bean, Rev. W. Stanley, *Sheffield, Christ Church, New Zealand.*
1883. BECKWITH, RIGHT REV. J. W. D.D. *Bishop of Georgia, Atlanta, Ga. U.S.A.*
1834. Beeby, Rev. C. E. M.A. Oxon, A.K.C. Vicar, *Yardley Wood, near Birmingham.*
1875. Beer, F. Esq.
1877. †Bell, Rev. Canon C. Dent, D.D. Hon. Canon Carlisle, *Rectory, Cheltenham.*
1879. Bell, Rev. Professor R. J. *Fern Lodge, Hadlaw Road, Tunbridge.*

1873. Bellamy, Rev. F. A. S. 9, *Sea View Terrace, Plymouth*.
 1884. Bennett, A. E. Esq.
 1884. Berkley, Miss E. *Fairlawn, Hollingdon Park, St. Leonard's-on-Sea*.
 1878. Berry, Rev. D. M. M.A. Oxon. Demi of Magd. Ellerton Prizeman, *All Saints' Parsonage, Northcote, Melbourne*.
 1876. †Best, Hon. H. M., 7, *Connaught Square, W.*
 1872. †Bickersteth, Very Rev. E. D.D. Dean of Lichfield, Proloc. of Conv. Canon Ch. Ch. Oxf. *Deanery, Lichfield*.
 1874. Billing, Rev. F. A. M.A. LL.D. F.R.S.L. 7, *St. Donatt's Road, New Cross, S.E.*
 1885. Binstead, C. H. Esq. 60, *Shooter's Hill Road, Blackheath, S.E.*
 1883. Birks, Rev. H. A. M.A. late Sch. Trin. Coll. Camb. *Bowls, Chigwell Row, Essex*.
 1882. Blackett, Rev. A. Russell, B.A. Sydney, Canon All Saints' Cath. Bathurst, *Parsonage, Blayney, N.S.W.*
 1880. ¶ Blencowe, Rev. G. Wes. Min. *Wakkerstroom, Transvaal, vid Natal*.
 1872. Blenkin, Rev. G. B. M.A. Preb. of Lincoln, R.D. *Boston Vicarage, Lincolnshire*.
 1877. Bliss, Rev. T. B.A. *Ewell Vicarage, Surrey*.
 1878. Bobbett, Mrs. S. F. *Rosenstein, Alexandra Road, Clifton*.
 1875. Boddington, R. Stewart, Esq. 15, *Markham Square, S.W.*
 1874. Bolster, Rev. Canon R. Crofts, M.A. T.C.D. *Rectory, Castle-martyr, Co. Cork, Ireland*.
 1879. Bomford, Rev. Trevor, M.A. Camb. *Multan, Punjab*.
 1883. Bonwill, W. G. A. Surg. Dent. 1721, *Locust Street, Philadelphia, U.S.A*
 1882. Bosanquet, W. D. Esq. *Yoxford, Dimbula, Ceylon*.
 1885. Bosward, Rev. S. T. B.A. 46, *Rothsay Road, Luton*.
 1885. Bowers, Rev. S. A.M. Ph.D. Ed. "Free Press," *San Beneventura, California, U.S.A.*
 1885. Bowles, Rev. C. B. *Abney Houses, Tunbridge Wells*.
 1883. Boyce, Rev. F. Bertie, *St. Paul's, Redfern, Sydney, N.S.W.*
 ♂ Boyce, Rev. W. B. F.R.G.S. *Sydney, N.S.W. (care of Messrs. McArthur, 19, Silk St. Cripple-gate, E.C.)*.
 1878. Bradshaw, Rev. Macnevin, M.A. Ex. Mod. Log. and Eth. T.C.D. *Rectory, Clontarf, Dublin*.
 1885. Brants, M. A. Esq. Ph.D. *Stationsweg, Zutphen*.
 1879. †Brass, Rev. H. M.A. F.G.S. *St. Matthew's Parsonage, Red Hill, Surrey*.

1873. Bridge, Captain John, 9th L.R.V. F.R.G.S. (care of T. Morley, Esq. *Hollybank, Sale, near Manchester*).
1883. Brindley, T. Esq. *St. Stephen's Ho. Newtown, Sydney, N.S.W.*
1882. Broadbent, Capt. J. E. R.E. *Woodall Cottage, Simla, Punjab, India.*
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S.E.; Wellington, New Zealand.*
- ROWLEY, Rev. A. C. M.A. F.R.H.S. *Sutterton, Spalding, Lincolnsh.*
- ¶RULE, Rev. W. H. D.D. *Clyde Road, Croydon.*
- ¶SAVILE, Rev. B. W. M.A. *Shillingford Rectory, Exeter*
- SAWYER, W. C. Esq. A.M. Harvard; A.M. Ph.D. Göttingen;
Prof. Phil. and Rhetoric, *Lawrence University, Apple-
ton, Wisconsin, U.S.A.*
- ‘SHAW, Rev. W. *Sowerby Bridge.*
- ‘SOUPER, Rev. F. A. M.A. Cantab. *The Meads, Eastbourne.*
- STORRS, Rev. W. T. B.D. *Vicarage, Sandown, I.W.*
- TAYLOR, Rev. R. *St. Stephen's, Newtown, Sydney, N.S.W.*
- THWING, Rev. E. D., Payson, B.A. Harvard, Prof. Rhet. and
Vit. Cult. 156, *St. Mark's Avenue, Brooklyn, U.S.A.*
- WAGNER, M. Esq. LL.D. *Wagner Inst. S.W. corner of Seventeenth
Street and Montgomery Avenue, Philadelphia, U.S.A.*
- WALLER, Rev. J. T. *Castletown Manor, Pallaskerry, Ireland.*
- ‘WATTS, Rev. J. C. D.D. *Hawkshead Street, Southport.*
- WHITE, Rev. Hill Wilson, M.A. LL.D. M.R.I.A. *Wilson's Hospital,
Multifarnham, Ireland.*
- WILLIS, Rev. J. T., A.B., T.C.D. *Earl Shilton Vicarage,
Hinckley, Leicester.*
- WILLIS, Rev. N. A.B. T.C.D. *Ifield Rectory, near Gravesend.*
- WILLIS, R. Esq. M.D. 133, *Rathmines, Dublin.*
- WILLIS, Ven. Archdeacon, *Cambridge, Auckland, N.Z.*
- WIRGMAN, Rev. A. T. *St. Mary's Rectory, Port Elizabeth, S. Africa.*
- WOKER, Prof. Philipp, D.D. Prof. Eccles. Hist. *Wankdorf, Berne,
Switzerland.*
- WOOLCOCK, Rev. J. F.G.S. *Walton Villa, Stackpoole Road, Bed-
minster, Bristol.*
- WRIGHT, Rev. C. H. H. D.D. T.C.D. M.A. Oxon. Ph.D. *Leipsic
Bampton Lecturer, 1878, Donnellan Lecturer, 1880-81,
33, Mespel Road, Dublin.*

LIBRARY.

The List of Works in the Library is published separately.

The names of the Donors to the Library appear in the preliminary proceedings of each meeting.

SOCIETIES EXCHANGING TRANSACTIONS WITH THE INSTITUTE.

American Geographical Society.
 American Geological Society.
 American Institute of Christian Philosophy.
 American Philosophical Society.
 Antiquarian Society of Philadelphia.
 Anthropological Society, New York.
 Anthropological Society, Washington.
 Canadian Institute.
 Colonial Museum of New Zealand.
 Geological Society.
 Geographical Society of the Pacific.
 Manitoba Historical and Scientific Society.
 New Zealand Institute.
 Newport Natural History Society, U.S.
 Numismatic Society of Philadelphia, U.S.
 Ohio Mechanics' Institute.
 Royal Asiatic Society (Bombay Branch).
 Royal Colonial Institute.
 Royal Dublin Society.
 Royal Geographical Society.
 Royal Institution.
 Royal Irish Academy.
 Royal Society.
 Royal Society of Canada.
 Royal United Service Institution.
 Smithsonian Institution (Washington)
 Society of Arts.
 Society of Biblical Archæology.
 Society of Biblical Literature, U.S.
 Sydney Museum, New South Wales.
 Sydney Observatory, New South Wales.
 United States Bureau of Ethnology.
 United States Geological Survey.
 United States Government Geological and Geographical Survey.
 United States Government Reports.
 Barrow Naturalists' Field Club.
 Warwickshire Natural History Society.
 West Chester Philosophical Society, U.S.

OBJECTS, CONSTITUTION, AND BYE-LAWS
OF
The Victoria Institute,
OR
Philosophical Society of Great Britain.

Adopted at the First Annual General Meeting of the Members and Associates, held on Monday, May 27th, 1867.

Revised at the Annual Meeting, June 15, 1874, and Jan. 4, 1875.)

§ I. *Objects.*

1. THE VICTORIA INSTITUTE, or PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, is established for the purpose of promoting the following objects, viz.:—

First. To investigate fully and impartially the most important questions of Philosophy and Science, but more especially those that bear upon the great truths revealed in Holy Scripture; with the view of reconciling any apparent discrepancies between Christianity and Science.

Second. To associate together men of Science and authors who have already been engaged in such investigations, and all others who may be interested in them, in order to strengthen their efforts by association; and, by bringing together the results of such labours, after full discussion, in the printed transactions of an Institution: to give greater force and influence to proofs and arguments which might be little known, or even disregarded, if put forward merely by individuals.

Third. To consider the mutual bearings of the various scientific conclusions arrived at in the several distinct branches into which Science is now divided, in order to get rid of contradictions and conflicting hypotheses, and thus promote the real advancement of true Science; and to examine and discuss all supposed scientific results with reference

to final causes, and the more comprehensive and fundamental principles of Philosophy proper, based upon faith in the existence of one Eternal God, who, in His wisdom, created all things very good.

Fourth. To publish Papers read before the Society in furtherance of the above objects, along with full reports of the discussions thereon, in the form of a Journal, or as the Transactions of the Institute.

Fifth. When subjects have been fully discussed, to make the results known by means of Lectures of a more popular kind, and to publish such Lectures.

Sixth. To publish English translations of important foreign works of real scientific and philosophical value, especially those bearing upon the relation between the Scriptures and Science; and to co-operate with other philosophical societies at home and abroad, which are now or may hereafter be formed, in the interest of Scriptural truth and of real science, and generally in furtherance of the objects of this Society.

Seventh. To found a Library and Reading Rooms for the use of the Members and Associates of the Institute, combining the principal advantages of a Literary Club.

§ II. *Constitution.*

1. The Society shall consist of Members and Associates, who in future shall be elected as hereinafter set forth.

2. The government of the Society shall be vested in a Council, to which members only shall be eligible, consisting of a President, two or more (not exceeding seven) Vice-presidents, a Treasurer, one or more Honorary Secretaries, and twelve or more (not exceeding twenty-four) Ordinary Members of Council, who shall be elected at the Annual General Meeting of the Members and Associates of the Institute. But, in the interval between two annual meetings, vacancies in the Council may be filled up by the Council from among the Members of the Society; and the Members chosen as Trustees of the funds of the Institute shall be *ex officio* Members of Council.

EXCEPTION.—When a specially-qualified Associate shall have been duly elected by the Members to a seat on the Council, he shall

be considered to have become a Member, but the payment of the Member's instead of the Associate's Subscription shall not be exacted. (Annual Meeting 1884.)

3. Any person desirous of becoming a Member or Associate shall make application for admission by subscribing the Form A of the Appendix, which must be signed by two Members of the Institute, or by a Member of Council, recommending the candidate for admission as a Member; or by any one Member of the Institute, for admission as an Associate.

4. Upon such application being transmitted to one of the Secretaries, the candidate for admission may be elected by the Council, and enrolled as a Member or Associate of the Victoria Institute, in such manner as the Council may deem proper; having recourse to a ballot, if thought necessary, as regards the election of Members; in which case no person shall be considered as elected unless he have three-fourths of the votes in his favour.

5. Application for admission to join the Institute being thus made by subscribing Form A, as before prescribed, such application shall be considered as *ipso facto* pledging all who are thereupon admitted as Members or Associates to observe the Rules and Bye-Laws of the Society, and as indicative of their desire and intention to further its objects and interests; and it is also to be understood that only such as are professedly Christians are entitled to become *Members*.

6. Each Member shall pay an Entrance Fee of One Guinea and an Annual Contribution of Two Guineas. A Donation of Twenty Guineas shall constitute the donor a Life Member.

7. Each Associate shall pay an Annual Contribution of One Guinea. A donation of Ten Guineas shall constitute the donor a Life Associate.

8. The Annual Contributions shall be considered as due in advance on the 1st day of January in each year, and shall be paid within three months after that date; or, in the case of new admissions, within three months after election.

9. Any Member or Associate who contributes a donation in one sum of not less than Sixty Guineas to the funds of the Institute shall be enrolled as a Vice-Patron thereof, and will thus also become a Life Member or Life Associate, as the case may be.

10. Should any member of the Royal Family hereafter become the Patron, or a Vice-Patron, or Member of the Institute, the con-

nexion shall be regarded as purely Honorary ; and none of the Rules and Bye-Laws relating to donations, annual contributions, or obligations to serve in any office of the Society, shall be considered as applicable to such personages of Royal Blood.

11. Any Member or Associate may withdraw from the Society at any time, by signifying a desire to do so by letter, addressed to one of the Secretaries ; but such shall be liable for the contribution of the current year, and shall continue liable for the annual contribution, until all sums due to the Society from such Member or Associate shall have been paid, and all books or other property borrowed from the Society shall have been returned or replaced.

12. Should there appear cause, in the opinion of the Council, for the exclusion from the Society of any Member or Associate, a private intimation may be made by direction of the Council, in order to give such Member or Associate an opportunity of withdrawing from the Society ; but, if deemed necessary by the Council, a Special General Meeting of Members shall be called for the purpose of considering the propriety of expelling any such person : whereat, if eleven or more Members shall ballot, and a majority of those balloting shall vote that such person be expelled, he shall be expelled accordingly. One month's notice, at least, shall be given to the Members of any such Special General Meeting.

13. Non-resident Members and Associates, or others desirous of promoting the objects and interests of the Institute, may be elected by the Council to act as Corresponding Members abroad, or as Honorary Local Secretaries, if within the United Kingdom, under such arrangements as the Council may deem advisable.

14. The whole property and effects of the Society shall be vested in two or more Trustees, who shall be chosen at a General Meeting of the Society.

14a.* Special donations to the general fund, whether from Members, Associates, or others desirous of promoting the objects and interests of the Institute, shall be invested in the names of the Trustees.

14b. The Trustees are empowered to invest the Endowment Fund in other securities than Three per Cent. Annuities, such other

* This paragraph was added with a view to enabling the Institute to receive special donations towards an endowment fund, the word "general" being intended to signify that fund.

securities being the Bonds of the Corporation of London, or Guaranteed Indian Railway Debentures, or Debenture Stocks.

14c. All moneys received on account of the Institute shall be duly paid to its credit at the Bankers, and all cheques shall be drawn, under authority of the Council, and shall be signed by the Honorary Treasurer and Honorary Secretary.

15. The accounts shall be audited annually, by a Committee, consisting of two Members,—one of whom may be on the Council,—to be elected at an Ordinary Meeting of the Society preceding the Anniversary Meeting. This Committee shall make a written Report to the Council at the first Meeting after such audit, and also to the Institute, upon the day of the Annual General Meeting,—stating the balance in the Treasurer's hands and the general state of the funds of the Institute.

16. Both Members and Associates shall have the right to be present to state their opinion, and to vote by show of hands at all General and Ordinary Meetings of the Society; but Members only shall be entitled to vote by ballot, when a ballot is taken in order to determine any question at a General Meeting.

§ III. *Bye-Laws (Privileges).*

1. A Member or Associate, when elected, shall be so informed by the Secretary in a printed copy of the letters, Form B, in the Appendix.

2. Members and Associates shall not be entitled to any privileges, or have the right to be present, or to vote at any of the Meetings of the Society, till they have paid the contributions due by them.

3. Annual subscriptions shall be considered as in arrear, if not paid on or before 31st March in each year, or within three months after election, as the case may be.

4. Should any annual subscription remain in arrear to the 30th June, or for six months after election, the Treasurer shall cause to be forwarded to the Member or Associate from whom the subscription is due, a letter, Form D, in the Appendix, unless such Member or Associate reside out of the United Kingdom; in which case the Form D shall not be sent unless the subscription continues unpaid till the 30th September.

5. If any arrears be not paid within twelve months, the Council

shall use their discretion in erasing the name of the defaulter from the list of Members or Associates.

6. Members shall be entitled to introduce two Visitors at the Ordinary Meetings of the Society ; and to have sent to them a copy of all the papers read before the Society, which may be printed in its Transactions* or otherwise, and of all other official documents which the Council may cause to be printed for the Society ; they will also be entitled to a copy of all such translations of foreign works or other books as are published under the auspices of the Society in furtherance of Object 6 (§ I).

7. Associates may introduce one visitor at the Ordinary Meetings, and shall be entitled to all the minor publications of the Society, and to a copy of its Transactions during the period of their being Associates, but not to the translations of foreign works or other books above referred to.† It shall, however, be competent to the Council of the Society, when its funds will admit of it, to issue the other publications of the Society to Associates, being ministers of religion, either gratuitously or at as small a charge as the Council may deem proper.

8. When it shall be found necessary to send the letter, Form D, to any Member or Associate who may be in arrear, the printed papers and other publications of the Society shall cease to be sent to such Member or Associate till the arrears are paid ; and, until then, he shall not be allowed to attend any Meeting of the Society, nor have access to any public rooms which may be in its occupation.

9. The Library‡ shall be under the management and direction of the Council, who are empowered to designate such works as shall not be allowed to circulate.

10. Each Member§ shall be allowed to borrow books from the Library, and to have not more than three volumes in his possession at the same time ; pamphlets and periodical publications not to be kept above fourteen days, nor any other book above three weeks.

11. Members who may borrow books from the Library shall be answerable for the full value of any work that is lost or injured.

* And the Transactions issued in the years during which they have not subscribed may be purchased at half price.

† These, as well as the Transactions issued in the years during which they have not subscribed, may be purchased at half price.

‡ For the use of the Members and Associates. — See 7th Object.

§ Members only are allowed to take books away.

12. Periodical publications shall remain on the table for a month, other books for a fortnight, after they are received.

13. When a book or pamphlet is wanted, and has been the stipulated time in the possession of any Member, the Secretary shall request its return, and a fine of threepence a day shall be incurred for every day it may be detained, which fine shall commence on the third day after the transmission of the notice in the case of town Members, and after the sixth day in the case of country Members ; and until the return of such works, and the discharge of all fines incurred, no further issue of books shall be permitted to the Member applied to.

14. The books shall be ordered in for inspection at such times as the Council shall appoint, and a fine of half-a-crown shall be incurred for neglecting to send in books by the time required in the notice.

15. A Book shall lie on the Library table in which Members may insert, for the consideration of the Council, the titles of such works as they desire to be purchased for the Institute.

§ IV. *Bye-Laws* (General, Ordinary, and Intermediate Meetings).

1. A General Meeting of Members and Associates shall be held annually on May 24th (being Her Majesty's birthday, and the Society's anniversary), or on the Monday following, or on such other day as the Council may determine as most convenient, to receive the Report of the Council on the state of the Society, and to deliberate thereon ; and to discuss and determine such matters as may be brought forward relative to the affairs of the Society ; also, to elect the Council and Officers for the ensuing year.

2. The Council shall call a Special General Meeting of the Members and Associates, when it seems to them necessary, or when required to do so by requisition, signed by not less than ten Members and Associates, specifying the question intended to be submitted to such Meeting. Two weeks' notice must be given of any such Special General Meeting ; and only the subjects of which notice has been given shall be discussed thereat.

3. The Ordinary Meetings of the Society shall usually be held on the first and the Intermediate Meetings on the third Monday evenings in each month, from November to June inclusive, or on such other evenings as the Council may determine to be convenient : and a printed card of the meetings for each Session shall be forwarded to each Member and Associate.

4. At the Ordinary and Intermediate Meetings the order of proceeding shall be as follows:—The President, or one of the Vice-Presidents, or a Member of the Council, shall take the chair at 8 o'clock precisely, the minutes of the last Ordinary or Intermediate Meeting shall be read aloud by one of the Secretaries, and, if found correct, shall be signed by the Chairman; the names of new Members and Associates shall be read; the presents made to the Society since their last Meeting shall be announced; and any other communications which the Council think desirable shall be made to the Meeting. After which, the Paper or Papers intended for the evening's discussion shall be announced and read, and the persons present shall be invited by the Chairman to make any observations thereon which they may wish to offer.

The claims of Members and Associates to take part in a discussion are prior to those of Visitors. The latter, when desiring to speak upon any Paper, must first send their cards to the Chairman and ask permission (unless they have been specially invited by the Council "to attend, and join in considering the subject before the Meeting," or are called upon by the Chairman). 1875.

5. The Papers read before the Society, and the discussions thereon, fully reported, shall be printed by order of the Council; or, if not, the Council shall, if they see fit, state the grounds upon which this Rule has been departed from, in the printed Journal or Transactions of the Society.

6. The Council may at their discretion authorise Papers of a general kind to be read at any of the Ordinary or Intermediate Meetings, either as introductory lectures upon subjects proper to be afterwards discussed, or as the results of discussions which have taken place, in furtherance of the 5th Object of the Society (§ I.).

7. With respect to Intermediate Meetings, the Papers read at which are not necessarily printed nor the discussions reported,* the Council, at its discretion, may request any lecturer or author of a paper to be read thereat, previously to submit an outline of the proposed method of treating his subject.

8. At the Ordinary or Intermediate Meetings no question relating to the Rules or General Management of the affairs of the Society shall be introduced, discussed, or determined.

* So arranged when the "Intermediate Meetings" were commenced 16th January, 1871.

V. *Bye-Laws* (Council Meetings).

1. The Council shall meet at least once every month from November to June inclusive, or at any other time and on such days as they may deem expedient. The President, or any three Members of the Council, may at any time call a special Meeting, to which the whole Council shall be summoned.

2. At Council Meetings three shall be a quorum ; the decision of the majority shall be considered as the decision of the Meeting, and the Chairman shall have a casting vote.

3. Minutes of the proceedings shall be taken by one of the Secretaries, or, in case of his absence, by some other Member present, whom the Chairman may appoint ; which Minutes shall afterwards be entered in a minute-book kept for that purpose, and read at the next Meeting of the Council, when, if found correct, they shall be signed by the Chairman.

§ VI. *Bye-Laws* (Papers).

1. Papers presented to be read before the Society shall, when read, be considered as the property of the Society, unless there shall have been any previous engagement with its author to the contrary ; and the Council may cause the same to be published in any way and at any time they may think proper after having been read. If a Paper be not read, it shall be returned to the author ; and, if a Paper be not published within a reasonable time after having been read, the author shall be entitled himself to publish it, and he may borrow it for that purpose.

2. When a Paper is sent to the Society for the purpose of being read, it shall be laid before the Council, who shall refer it to two of that body, or of the other Members or Associates of the Society whom they may select, for their opinions as to the character of the Paper and its fitness or otherwise for being read before the Society, which they shall state as briefly as may be, in writing, along with the grounds of their respective opinions. Should one of such opinions be adverse to the Paper and against its being read before the Society, then it shall be referred to some other referee, who is unaware of the opinion already pronounced upon the Paper, in order that he may state his opinion upon it in like manner. Should this opinion be adverse to the Paper, the Council shall then consult and

decide whether the Paper shall be rejected or read ; and, if rejected, the Paper shall be returned to the author with an intimation of the purport of the adverse opinions which have been given with respect to it ; but the names of the referees are not to be communicated to him, unless with their consent or by order of the Council. All such references and communications are to be regarded as confidential, except in so far as the Council may please to direct otherwise.

3. The Council may authorise Papers to be read without such previous reference for an opinion thereon ; and when a Paper has been referred, and the opinion is in favour of its being read in whole or in part, the Council shall then cause it to be placed in the List of Papers to be so read accordingly, and the author shall receive due notice of the evening fixed for its reading.

4. The authors of Papers read before the Society shall, if they desire it, be presented with twenty-five separate copies of their Paper, with the discussion thereon, or with such other number as may be determined upon by the Council.

§ VII. *Bye-Laws* (General).

1. The government of the Society, and the management of its concerns are entrusted to the Council, subject to no other restrictions than are herein imposed, and to no other interference than may arise from the acts of Members in General Meeting assembled.

2. With respect to the duties of the President, Vice-Presidents, and other Officers and Members of Council, and any other matters not herein specially provided for, the Council may make such regulations and arrangements as they deem proper, and as shall appear to them most conducive to the good government and management of the Society, and the promotion of its objects. And the Council may hire apartments, and appoint persons not being Members of the Council, nor Members or Associates of the Institute, to be salaried officers, clerks, or servants, for carrying on the necessary business of the Society ; and may allow them respectively such salaries, gratuities, and privileges, as to them, the Council, may seem proper ; and they may suspend any such officer, clerk, or servant from his office and duties, whenever there shall seem to them occasion ; provided always, that every such appointment or suspension shall be reported by the Council to the next ensuing General Meeting of the Members, to be then confirmed or otherwise as such Meeting may think fit.

FORM A.
FORM OF APPLICATION for the Admission of Vice-Patrons, Members, or Associates of the VICTORIA INSTITUTE.

*I hereby desire to be enrolled a **
INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.
 [Date] _____ 188 .
 of the VICTORIA

<p>* Here insert Vice-Patron, <i>or</i> Member, <i>or</i> Life Member, <i>or</i> Associate, <i>or</i> Life Associate.</p>	<div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">{</div> <div> <p><i>Candidate's ordinary Signature,</i> <i>and full name, if necessary.</i></p> <p><i>Title, Profession, University degree</i> <i>&c., or other distinction.</i></p> <p><i>Address</i></p> <p><i>If an Author, the name of the Can-</i> <i>didate's works may be here stated.</i></p> </div> </div>
	<div style="display: flex; align-items: center;"> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="width: 30px; height: 20px; border-bottom: 1px solid black; margin-bottom: 5px;"></div> </div>

To be signed by Two Members or a
 Member of Council.

To the Honorary Officers of the VICTORIA INSTITUTE,
 7, Adelphi Terrace, Strand, London, W.C.

FORM B.

SIR,

18 .

I have the pleasure to inform you, with reference to your application dated the _____, that you have duly been elected a _____ of the VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

I have the honour to be, Sir,
Your faithful Servant,

To _____ *Hon. Sec.*

FORM C.

(Bankers) Messrs. _____

* Please pay Messrs. RANSOM, BOUVERIE, & Co. my Annual Contribution of TWO GUINEAS to the VICTORIA INSTITUTE, due on the 1st of January, 188 , and the same amount on that day in every succeeding year, until further notice.

I am,
Your obedient Servant,

_____ 188 .

If this Form be used, please add your Signature, Banker's Name, and the Date, and return it to the Office, 7, Adelphi Terrace. Receipt-stamp required.

* The above is the form for Members. The form for Associates is the same except that the Subscription stands as "ONE GUINEA."

FORM D.

SIR,

18 .

I am directed by the Council of the VICTORIA INSTITUTE to remind you that the Annual Contribution due by you to the Society for the year _____ is now six months in arrear; and I have to call attention to the Bye-Laws of the Institute, § III., ¶ 4 and 8, and to request you to remit to me the amount due (viz. £) by Post-office order or otherwise, at your earliest convenience.

I have the honour to be, Sir,
Your faithful Servant,

To _____ *Treasurer.*

FORM E.

FORM OF BEQUEST.

I give and bequeath to the Trustees or Trustee for the time being of THE VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, to be applied by them or him for the purposes of the said Society, the sum of £
such sum to be wholly paid out of such part of my personal estate as may be lawfully applied to the purposes of charity, and in priority to all other legacies. And I declare that the receipt of the Trustees or Trustee for the time being of the said Society shall be a good discharge to my Executors for the said legacy.

THE JOURNAL OF THE TRANSACTIONS.

Since the Inauguration of the Society, on the 24th of May, 1866, the following Papers have been read :—The Quarterly Parts of the Journal are indicated by the numbers prefixed. (*The volumes are sold at One Guinea to Non-Members; Half-a-Guinea to Members and Associates; those issued during the years of subscription are not charged for.*)

FIRST SERIES, VOLS. 1 TO 5.

VOL. I.

1. A Sketch of the Existing Relations between Scripture and Science. By the late GEORGE WARINGTON, Esq., F.C.S.
2. On the Difference in Scope between Scripture and Science. By the late C. MOUNTFORD BURNETT, Esq., M.D., Vice-President V.I.
On Comparative Philology. By the Rev. ROBINSON THORNTON, D.D., Vice-President V.I.
On the Various Theories of Man's Past and Present Condition. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
3. On the Language of Gesticulation and Origin of Speech. By Professor J. R. YOUNG.
On Miracles: their Compatibility with Philosophical Principles. By the Rev. W. W. ENGLISH, M.A.
Thoughts on Miracles. By the late E. B. PENNY, Esq.
On the General Character of Geological Formations. By the late E. HOPKINS, Esq., C.E.
4. On the Past and Present Relations of Geological Science to the Sacred Scriptures. By the Rev. Professor JOHN KIRK.
On the Lessons taught us by Geology in relation to God. Rev. J. BRODIE, M.A.
On the Mutual Helpfulness of Theology and Natural Science. By Dr. GLADSTONE, F.R.S.
On Falling Stars and Meteorites. By the late Rev. W. MITCHELL, M.A., Vice-President V.I.
(*The above Papers, with the Discussions thereon, and with "Scientia Scientiarum," being some Account of the Origin and Objects of the Victoria Institute," with the Reports of the Provisional Proceedings, and the Inaugural Address by the late Rev. Walter Mitchell, M.A., Vice-President, form Volume I. of the "Journal."*)

VOL. II.

5. On the Terrestrial Changes and Probable Ages of the Continents, founded upon Astronomical Data and Geological Facts. By the late EVAN HOPKINS, Esq., C.E., F.G.S.
- On the Credibility of Darwinism. By the late GEORGE WARINGTON, Esq., F.C.S.
- On the Credibility of Darwinism. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
6. On Utilitarianism. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
- On the Logic of Scepticism. By the Rev. ROBINSON THORNTON, D.D., V.P.
- Annual Address (On the Institute's Work). By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
7. On the Relations of Metaphysical and Physical Science to the Christian Doctrine of Prayer. By the Rev. Professor JOHN KIRK.
- On Geological Chronology, and the Cogency of the Arguments by which some Scientific Doctrines are supported. (In reply to Professor Huxley's Address delivered at Sten College on 21st Nov., 1867.) By the late J. REDDIE, Esq., Hon. Sec. V.I. (1867-68).
8. On the Geometrical Isomorphism of Crystals, and the Derivation of all other Forms from those of the Cubical System. (6 Plates.) By the late Rev. W. MITCHELL, M.A., V.P.

VOL. III.

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The Meetings, of which due notice is given, are held at 7, Adelphi Terrace, at Eight o'clock on the evenings of the First and Third Mondays of the Winter, Spring, and Summer Months. Proof Copies of the Papers to be read can be had by those desirous of placing their opinions thereon before the Members (when unable to attend, they can do this in writing).

Members and Associates on 1st January, 1871, 203.—Joined since.—In 1871, 91;—1872, 109;—1873, 110;—1874, 111;—1875, 115;—1876, 107;—1877, 100;—1878, 101;—1879, 105;—1880, 104;—1881, 122;—1882, 122;—1883, 126;—1884, Foreign 41; Home, 68—109.

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